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BROAD ASPECTS OF MENTAL RETARDATION

1 U. S. Health, Education, and Welfare Department. The Problem of Mental Retardation. (Secretary's Mental Retardation Committee) Washington, D. C., Superintendent of Documents, U. S. Government Printing Office, 1966, 22 p. $0.15.

The pamphlet provides a basic introduction to MR with an overview of related problems. It defines MR as an incomplete mental development or subaverage intellectual functioning originating during the developmental period and associated with impairment in adaptive behavior. Characteristics are outlined for the profound (IQ <20), severe, moderate, and mild (IQ 52-67) MR from birth to adulthood with their potential abilities for certain ages indicated. Help may be provided through research, prevention, clinical services, residential care, special education, vocational rehabilitation, social service, parent counseling, preparation of professional personnel and economic concern. The alleviation of MR among the culturally deprived will take the mediations of workers from a variety of disciplines. The scope of the problem is estimated at 3 percent of the population. Plans for the future include more federal grant-in-aid programs, community guidelines for action and provision for more community and university-affiliated facilities to improve services and to implement new ones. Currently, special education classes have increased, MRs are receiving vocational rehabilitation, and more parents are being counseled. Present concerns are the lack of enough sheltered workshops, foster home care, residential facilities for older MRs, public understanding and acceptance of the problem, and methods of prevention. (4 refs.) - G. Trakas.

2 President's Mental Retardation Committee. MR 67: A First Report to the President on the Nation's Progress and Remaining Great Needs in the Campaign to Combat Mental Retardation. Washington, D. C., Superintendent of Documents, U. S. Government Printing Office, 1967, 32 p. $0.50.

Progress has been made in the nationwide effort to combat MR, however, certain areas urgently need attention. Since the Committee's appointment, it has inquired into the status, trends, and needs of programs for the MR. Major successes over the last 5 years include: the writing of plans by all 50 states for providing comprehensive services, the demand for trained MR workers in industry and government, progress in prevention, establishment of basic research and training centers, the extension of services to MR children of U. S. armed forces members, and the provision of privately sponsored day care and recreational programs. Areas urgently needing attention are: (1) availability of MR services to more people; (2) more effective and extensive manpower and training programs; (3) fuller use of existing resources; (4) more public-private partnerships in program development, services, and research; (5) development of a national MR information and resource center; (6) continued encouragement in basic research, training in application of research, and rapid translation of research results in service program uses; (7) early identification and treatment; (8) social and institutional planning for the coming decades which accounts for the MR's special needs; (9) clarification of the MR's legal status with his rights guaranteed; and (10) the need for imaginative ideas and approaches that will make new advances possible. (No refs.) - A. Clevenger.

3 Tarjan, George. Some current issues in mental retardation. California Mental Health Research Digest, 5(3):147-157, 1967.

The issues of definition, epidemiology, diagnosis, treatment, prevention, and care of the MR are discussed as they relate to the university-affiliated clinical and research centers for MR which provide opportunities for multi-disciplinary collaboration and coordination as well as community-based services for MRs. Although the services and interests of specific disciplines may need to be governed by limited definitions of MR, the overall definition used to determine the center's policy should be broad and general. This will increase the range of available services and opportunities for research. Epidemiological studies to be used for practical planning should be based on an assessment of those being served, those seeking services who are unable to obtain them, those needing services who have not sought them, and those who might benefit from services. Research opportunities for MR centers include: a multi-disciplinary evaluation of present testing procedures aimed at the development of age-specific methods designed to evaluate deficits, capabilities, and aptitudes; the investigation of the emotional effects of an MR child on other family members; and the assessment of the relative value of generic and specialized services for MRs. (23 refs.) - J. K. Wyatt.

School of Medicine and
School of Public Health
University of California at Los Angeles
Los Angeles, California

4 Zigler, Edward. Mental retardation: Current issues and approaches. In: Hoffman, Lois Wladis, & Hoffman, Martin L., eds. Review of Child Development Research, Volume 2. New York, New York, Russell Sage Foundation, 1966, p. 107-168.

MR research studies in the last 10 years support the view that MR does not represent a unique area of knowledge but is closely related to developmental psychology. MR is an arbitrary classification and, because of the difficulties involved in defining intelligence, a universally acceptable definition has not been found. New trends in intelligence research emphasize the assessment and identification of cognitive structures and processes. A distinction needs to be made between intelligence which implies the content of behavior and intellectual functioning which implies cognition and the manner in which it develops. The prevalence of MR varies depending on whether test score figures or social competence criteria are used as classification measures. The 2-group approach to MR distinguishes between MR caused by specific physiological defects and familial MR, the etiology of which is unknown. Research on the question of nature versus nurture supports both positions. Inherited intellectual ability seems to be an important component of intelligence and environmental factors seem to have some effect on intellectual development. Defect theories explain all MR as being the result of a specific defect. These include verbal mediation, cortical satiation, cognitive defect, and stimulus-trace theories. Recent research has investigated the influence of nonintellective motivational and emotional factors on the performance of the MR. Factors such as anxiety, social deprivation, positive and negative reactions, failure, reinforcement, and institutionalization appear to have important effects on the functioning of the MR. Environmental manipulation of these factors results in their modification. (201 refs.) - J. K. Wyatt.

Yale University
Hartford, Connecticut

5 Weir, Morton W. Mental retardation. Science, 157(3788):576-577, 1967. (Letter)

A number of arguments which either clarify or conflict with the "developmental" theory of retardation are presented. Failure to distinguish rate of development from level of development limits the predictive usefulness of this theory. Equation of MA and IQ ignores the importance of rate of development. Rates of intellectual growth should be an evident quality in sufficiently complex laboratory tasks since children with identical MAs may have obtained their scores on intelligence tests either from past learning or from an ability to deal with new and unfamiliar materials. The hypothesis —— "equal-MA, equal cognitive functioning" is partly based on tests which involve a minimum of learning and information processing. This theory should be tested further with complex cognitive tasks. The differences between the "developmental" theory and the "defect" theories are not great. A basic difference between normal and MR children is not popularly subscribed to but rather it is thought that MR children have less of something than normals do. (2 refs.) - R. Froelich.

Department of Psychology
University of Illinois
Urbana, Illinois

6 Jastak, Joseph F. Mental retardation. Science, 157(3788):577-578, 1967. (Letter)

It is argued that the current state of measuring MR and intellectual function is so primitive that we cannot make dogmatic statements and attempt to differentiate between types and degrees of retardation. One problem is the wrong assumption that the children we are talking about really are MR. Using multiple criteria in determining IQ misclassifies 4 out of 5 alleged MR children. A close look at experimental populations would expose the fact that they are composed of a "mishmash" of individuals many of whom have little to do with MR. Such parameters as language defects or cognitive rigidity which are used as evidence of MR, are actually not typical of retardation but occur at random in all people. Until we can develop an acceptable theory of intelligence and place full attention on the multivariate nature of behavioral measures we cannot really divide retardates into types. A real contribution at the present time would be to admit that we do not know much about MR. (2 refs.) - R. Froelich.

Guidance Associates
1526 Gilpin Avenue
Wilmington, Delaware

7 Zigler, Edward. Mental retardation. Science, 157(3788):578-579, 1967. (Letter: comment on letters by Morton W. Weir and Joseph F. Jastak)

A rebuttal argument is presented in response to views about the authors' theory of MR. It

is incorrect to state that MRs cannot, in many cases, be differentiated into organic and familial types. A different classification system is not necessarily more true or more false than any other since different systems have different goals. Plenty of evidence is available to differentiate organic retardates from others. The differences presented are partly semantic confusion. The measurement of rate and level of intellectual development is not really the question, but what does the different rate mean. The different slopes of the MA curves are clearly not useful indicators of cognitive function in some situations. The IQ of an individual cannot be independent of MA. Certainly the MA as obtained on standard intelligence tests is far from a perfect indicator of cognitive functioning but neither is the IQ which represents fewer cognitive correlates. No basic argument exists regarding task selection for testing individuals. The differences between the developmental position and the defect position remains great. At the current time the developmental position represents a tenable hypothesis. (2 refs.) - R. Froelich.

Department of Psychology
Yale University
New Haven, Connecticut

8 Dexter, Lewis A. A social structure interpretation of the history of concern about "mild" retardation. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 7 p. Mimeographed.

A theoretical and historical discussion of why retardation is a problem is presented through a structural rather than cultural approach. The period 1905-1925 expressed a concern with retardation due to the eugenics doctrine, mass immigration, urban growth, and industrial growth in addition to social work and mass communication all of which drew attention to sharp deviations through compulsory schooling. There was a gap until 1950 when retardation again became a matter of professional and public concern and awareness. Schooling and education are now the means by which the young are stratified, other bases having disappeared. Hope for changes in the margins of social structure are given probability. (No refs.) - C. A. Pepper.

536 Pleasant Street
Belmont, Massachusetts 02178

9 Mohl, B. Denmark's provision for mentally retarded children. Teaching and Training, 5(1):2-6, 1967.

Improvement in facilities and care for the MR in Denmark has been partly the result of the 1959 Act regarding their care. The philosophy that prevails in this country is that MR individuals should remain in the community unless special reasons exist that would require institutionalization. The age limit for compulsory school education for MRs is 21 years. A special feature of Denmark's school system is the establishment of "Green Schools," which are located in beautiful areas and are made of prefabricated materials, permitting flexibility in planning. Special sections for vocational training and other services can be added to the original building when needed. In the next 3 years, the erection of 33 new schools is planned. Teacher training is accomplished by courses offered at the Personnel High School in Copenhagen where approximately 1,000 students are receiving 3 years of education and additional training in the field. A research project recently investigated the beneficial effects of a more salubrious climate than the Danish on the health of mongoloid children. Beneficial effects were noted but more data are needed to confirm the results. (No refs.) - A. M. Scheib.

No address

10 Australian Group for the Scientific Study of Mental Deficiency. Proceedings of the Fifth Annual Interstate Conference on Mental Deficiency. Van Pelt, J. D., ed. Brisbane, Australia, October 1966, 70 p.

The 1966 proceedings of the Australian Group for the Scientific Study of Mental Deficiency present an overview of problems from various disciplines and include 9 papers which focus on education and development, the disadvantaged child, infantile autism, and research methodology. Suggestions for services include the development of "defect" and "at-risk" registers, genetic counseling clinics, and day care centers with the emphasis on community awareness and participation. Guidelines for educational development and community care of the MR are provided with stress on adequate evaluation of both the MR and the services provided. Exclusion of the MR from normal community life only contributes to their debilitation. A behavior scale

and a description of the Cornelia de Lange syndrome are included. (49 refs.) - A. Huffer.

CONTENTS: Conference Program; The Field of Study of Mental Deficiency; The Method of Study of Mental Deficiency; Infantile Autism-the Second Stage; Report on a Conference on a Policy for Services for the Mentally Retarded; Genetic Counseling; Measurement and Evaluation of Development; The Educational Difficulties of the Socially Deprived Child; Do We "Dehabilitate" the Mentally Retarded? Six Cases of de Lange's Syndrome.

11 Urquhart, G. S. The field of study of mental deficiency. In: Australian Group for the Scientific Study of Mental Deficiency. Proceedings of the Fifth Annual Interstate Conference on Mental Deficiency. Van Pelt, J. D., ed. Brisbane, Australia, October 1966, p. 3-6.

The need for research in the field of MR in Australia is discussed briefly in areas such as prevention, professional training, and vocational placement. Financial benefits from application of research on this population aid the communities. Preventive research has shown some results in the biomedical field but these are limited in their effect on the total incidence of MR. Basic research should involve disciplines of observation and recording. The trainable rather than educable groups in Australia seem to have profited most by the results of research by the increase in services. Special vocational information is needed for job placement for the MR population. The need for a multi-discipline approach in research is stressed. (No refs.) - B. Bradley.

Royal Brisbane Hospital
Brisbane, Australia

12 Harper, M. A. The method of study of mental deficiency. In: Australian Group for the Scientific Study of Mental Deficiency. Proceedings of the Fifth Annual Interstate Conference on Mental Deficiency. Van Pelt, J. D., ed. Brisbane, Australia, October 1966, p. 7-10.

The basic tenets of all scientific investigation (collection and recording of facts, classification, formulation of hypotheses, and experimental testing of the hypotheses), apply to the applied or clinical study of mental deficiency. More people must be trained to observe and record; it would be particularly useful to train parents of MRs. Information gained must be disseminated in an intelligible form. Primary importance should be given to a definition of the boundaries of MR not based on changing criteria as MR is a quantitative rather than qualitative deficiency. (7 refs.) - W. A. Hammill.

University of Queensland
Brisbane, Australia

13 Research into mental retardation. Nursing Mirror, 124(6):136, 1967.

Clinical research centers throughout the United States are carrying out studies on MR sponsored by the U. S. Public Health Service. The research at the various centers includes: (1) Children's Hospital, Columbus, Ohio--biochemical detection and hereditary bases; (2) State University of New York, Upstate Medical Center, Syracuse--longitudinal study of phenylketonuria carriers from birth; (3) Children's Hospital of Los Angeles--nerve cell abnormalities; (4) St. Christopher's Hospital for Children, Philadelphia--clinical treatment study of hyperglycinemia; (5) Massachusetts Institute of Technology--brain injury; (6) Children's Hospital of Pittsburgh--galactosemia; (7) Eugene Talmadge Memorial Hospital, Medical College of Georgia, Augusta--body chemical defects; and (8) Stanford University School of Medicine--prematurity. (No refs.) - J. Snodgrass.

14 Stanley, Julian C. Problems in equating groups in mental retardation research. Journal of Special Education, 1(3): 241-256, 1967.

Mentally retarded Ss are often matched when it would be preferable for purposes of statistical analysis to use randomized blocking, the analysis of covariance, or correlational and discriminant analysis. In the process of matching, Ss often are discarded, subsequently limiting the population to which the results can be generalized. A randomized block design enables matching without losing Ss. The procedure is to rank-order scores, divide them into blocks of 2, and randomly determine groups to which the pairs of Ss are assigned. In using analysis of covariance, groups are selected randomly and each relevant antecedent variable is treated as a covariable. Again, no Ss are discarded and this method easily accommodates unequal groups. This technique increases the power of the statistical analysis. The covariance method also can be used to partial out the effects of an independent variable which is not

equivalent between or across groups. The assumptions of the analysis of covariance technique are discussed. The techniques of covariance and analysis of variance are compared where pairs of subjects are matched and where there is no matching. There are times when the loss in degrees of freedom through matching results in a less powerful test than if the Ss were selected at random. The analysis of covariance used in conjunction with a random sample of Ss is often preferable to matching. Correlational or discrimination analysis is often superior to analysis of covariance or to matching. (58 refs.) - L. S. Watson.

University of Wisconsin
Madison, Wisconsin

15 Williams, P. Regression analysis programmes for the identification of important variables in educational and psychological experiments. British Journal of Educational Psychology, 37(1):112-114, 1967.

The usefulness of the computerized stepwise regression (SWR) program in determining the most important variables for study from pilot-experimental data was demonstrated in an investigation concerned with reading development in educationally subnormal children. The SWR program identifies the most important variables for predicting a certain criterion. It points out the mean variance and standard deviation of each variable, the covariance, and the correlation matrices. A regression equation is then computed for the criterion from the variable which predicts the greatest proportion of the criterion variance. Then the variable which predicts the greatest proportion of the remaining variance is introduced and a second regression equation computed. In this way, other variables are added singly to the regression equation until a variable added makes no significant contribution in predicting criterion variance. At each stage, the multiple correlation coefficient between predictors and the criterion, the constant term of the equation, the beta weights, and the total and predicted sums of squares are indicated. The series of regression equations and the changes which occur as variables are added provide useful information. In this study, 4 classes of fourth grade children in 3 Mid-West communities in the U. S. A. were taught Welsh orthography for a period of 20 minutes for 4 days. Measurements were obtained on 12 predictor variables. The data for 79 children were placed in a SWR program which used only 2 variables since the addition of the next variable did not produce any significant increment in predicted variance. (3 refs.) - C. M. N. Mehrotra.

University College of Swansea
Swansea, South Wales

16 Gellner, Lise. Dr. Lise Gellner's letter from Colorado Springs. Parents' Voice, 17(3):25-27, 1967.

This letter written prior to the death of Dr. Lise Gellner contains a brief resume of her theory regarding the education of MR children. The major thesis is that MR is not the result of "underdevelopment" of the whole brain but rather is confined to specific systems of the brain. Impairment in different brain systems could lead to MR. The difference in the function of the affected systems provides an explanation for observable differences in the behavior patterns of MR children. MR is not a clinical entity; it is a statement of a symptom. Intelligence is dependent upon the integrity of the cerebral systems of perception and damage to the midbrain structures would affect perceptual abilities. The results of an educational program based on this theory are reported for 25 day students located in Colorado Springs, Colorado. These children ranged in CA from 5 to 7 years and IQs extended from 20 to 60. Sixteen children increased or retained their IQ scores while 6 children had left the program due to factors such as military transfers of parents. The difficulties in teacher training and in attempts to establish this theory in England and the United States are described. (No refs.) - B. Bradley

No address

17 Baumeister, Alfred A., ed. Mental Retardation: Appraisal, Education, and Rehabilitation. Chicago, Illinois, Aldine Publishing, 1967, 419 p. $12.50

Recent research findings on MR lend support to the belief that MR can be treated and significant behavior changes can be produced. When MR is viewed as a behavior problem, MRs become people who have developed maladaptive ways of behaving. A variety of treatments aimed at the development of adaptive behavior change in MRs is available. This collection of papers is intended to acquaint students and workers in the field with recent theoretical and research findings in specific problem areas. Emphasis is on empirical findings and practical applications. Specialists in each area present reviews of current theory,

research, and practice. Discussions on the value of programmed instruction; special education programs; various evaluation procedures; vocational preparation; classification methods; and parent counseling are included. This is a source book on the behavioral and biological nature of MR and should be of interest to psychologists, social workers, mental health personnel, special educators, nurses, teachers, and doctors. (1,651 refs.) -J. K. Wyatt

CONTENTS: Definition, Diagnosis, and Classification; The Multidisciplinary Approach to Mental Retardation; Perceptual, Conceptual, and Psycholinguistic Evaluation of the Mentally Retarded Child; Personality Evaluation; Speech, Language, and Hearing of the Mentally Retarded; The Role of Environmental Factors in the Treatment of Institutionalized Mental Retardates; Psychotherapy and Other Adjustment Techniques with the Mentally Retarded; Learning Abilities of the Mentally Retarded; Programmed Instruction for Retarded Children; Vocational Preparation and Occupation; Public School Programs for the Mentally Retarded; The Characteristics, Selection, and Training of Institution Personnel; Counseling the Parents of the Retarded.

18 Brison, David W. Definition, diagnosis, and classification. In: Baumeister, Alfred A., ed. Mental Retardation: Appraisal, Education, and Rehabilitation. Chicago, Illinois, Aldine Publishing, 1967, Chapter 1, p. 1-19.

The variety of different definitions of MR and the lack of practical utility inherent in presently available systems of diagnosis and classification reflect the influence of opposing theoretical views concerning the etiology and prognosis of MR. The current American Association on Mental Deficiency (AAMD) definition of MR emphasizes the coexistence of deficits in adaptive behavior and intellectual functioning and omits reference to etiology and prognosis. This is in line with current thinking which emphasizes multiple causation and possible reversibility. Historically, MR definitions have used either IQ or social competence as a sole criterion, have insisted on constitutional origin, have emphasized the incurability of MR, and have made a distinction between MR and mental deficiency. Historical diagnostic practices have stressed irreversible cause and phenotype relationships. Present diagnosis is based either on an evaluation of the origin and course of the MR or on the classification of observed characteristics. Classification procedures may be used to correlate etiologic and prognostic factors in order to predict future social usefulness. AAMD presents both a medical and behavioral classification system. These supplement one another. The 8-category medical system views MR in terms of underlying disease process or medical condition. Emphasis is on disease rather than on behavioral disorder. The behavioral system emphasizes deficits of measured intelligence and adaptive behavior and is not based on causal factors. The future development of AAMD classification systems should include specific symptom descriptions which can be classified into useful systems. Research which will establish predictive validity of classifications is needed. (80 refs.) - J. K. Wyatt.

Ontario Institute for Studies
in Education
University of Toronto
Toronto, Canada

19 Hoffman, Lois Wladis, & Hoffman, Martin L., eds. Review of Child Development Research, Volume 2. New York, New York, Russell Sage Foundation, 1966, 598 p. $8.00.

This summary and interpretation of important current findings in child development research is intended to be of special relevance to professional workers. Major research areas omitted in volume 1 of this series are treated here. Topics considered are: social and psychological development; environmental influences; constitutional factors in behavior; adolescence; testing; and deviant influences on development such as MR, psychophysiological disorders; and delinquency. The research presentations include summaries of pertinent historical data; an overview of current research results discussed in nontechnical language; and discussions of methodological limitations when relevant. Research reviews are organized around conceptual schemes in order to make the data more meaningful and to aid in the reduction of global ideas so that cause and effect processes may be identified. Pediatricians, social workers, educators, researchers, and child psychiatrists and psychologists will find this review useful. (1,745 refs.) - J.K. Wyatt.

CONTENTS: Family Structure, Socialization, and Personality; Language Development; Mental Retardation: Current Issues and Approaches; Psychophysiologic Disorders in Children; Socialization and Social Structure in the Classroom; Psychological Testing of Children; The Development of Intergroup Attitudes; Development of Occupational Motives and Roles; Juvenile Delinquency: The Sociocultural Context; Modal Patterns in American Adolescence; Body Size and Its Implications.

20 Yerushalmy, J. The classification of newborn infants by birth weight and gestational age. Journal of Pediatrics, 71(2):164-172, 1967.

A system for classification of newborn infants into 5 groups according to birth weight and gestation was based on data covering a 3-year period of single white live births in New York City (1957-1959). Group I consisted of all infants of 1,500 grams or less which had a mortality of 707.3 per 1,000 live births. Group II consisted of infants between 1,501 - 2,500 grams of less than 37 weeks gestation which had a mortality of 104.7 per 1,000 live births. Group III consisted of infants between 1,501 - 2,500 grams of 37 weeks gestation or more which had a mortality of 32.0 per 1,000 live births. Group IV consisted of infants of 2,501 or more grams of less than 37 weeks gestation which had a mortality of 13.7 per 1,000 live births. Group V consisted of infants weighing 2,501 or more grams of 37 weeks gestation or more which had a mortality of 4.7 per 1,000 live births. This type of classification separates infants of low birth weight according to rates of intrauterine growth, recognizing that such infants do not represent a homogeneous group. It appears to be a valid, meaningful, and practical method of grouping neonates. The percentile curves of Lubchenco and the minus 2 score of Gruenwald which are 2 classification systems currently in use are discussed. (30 refs.) - R. Froelich.

Child Health and Development Studies
3867 Howe Street
Oakland, California 94611

21 Wertheim, Eleanor S. The school aged child with multiple minimal handicaps. Australian Paediatric Journal, 3(1):1-14, 1967.

The syndrome of multiple minimal handicaps (SMMH) consists of variable mild neurological deficits that disrupt the normal process of maturation and learning. It has had a number of descriptive titles and does not consist of a specific clinical entity. The natural history of the SMMH often begins in infancy with feeding or sleeping problems. The infant's over- or under-reactivity frequently leads to secondary emotional problems within the family. At the toddler stage the child with SMMH may appear to have MR and will show a deficit in 2 or more of the following areas: orientation in space and time; motor development; visuo-motor coordination; language development; and emotional and general behavior. The school age child will deviate in behavior or learning. The main conditions that should be differentiated from SMMH are MR, brain damage (known neuropathology), sensory loss such as deafness, developmental lag, and emotional disorders. The differentiation between emotional and personality problems that are primary and those that are secondary to SMMH is important. Treatment should include interpretation of the problem to the child, family, and school. Special measures include medication, special education, and psychotherapy. (19 refs.) - R. Froelich.

Royal Children's Hospital
Melbourne, Australia

22 Banks, Barbara, & Warkentin, Adena. Mentally retarded children aren't all alike. Parents' Magazine, 42(3):56-58, 80, 82, 84, 1967.

In locating an appropriate home or school for MR children, the special needs of the individual child must be considered. Care and placement may be institutional, day-care center, or foster home. The latter service is received through the Family Care Program, pioneered in California. In placing children, parents are cautioned to investigate the physical and academic characteristics of these schools to determine the best facility for their child. Help in this may be secured through the National Association for Retarded Children, the U. S. Children's Bureau, and the American Association on Mental Deficiency. (5-item bibliog.) - G. Trakas.

No address

23 Menolascino, Frank, & Wolfensberger, Wolf. Evocation of career choices in retardation: A summer work experience and training program. Mental Retardation (AAMD), 5(2):37-39, 1967.

The Summer Work Experience and Training (SWEAT) program at the Nebraska Psychiatric Institute (NPI) was designed to encourage career choices in MR. Eight high school and college girls (ages 17-20) participated in the project. The 9-week program included orientation, reading assignments, films, tours and visits, supper seminars in staff homes, lecture series, and weekly summarization sessions. Experience included assignments at the NPI multidisciplinary evaluation clinic for children under 16 years of age, a nursery school program for 3- to 8-year-olds, vocational rehabilitation program, and community mental health clinics. Final evaluation

consisted of tests, a repeat of NPI facts about MR, written and oral statements of suggestions from the students. Recommendations are: a need for more funds, a more homogeneous age and educational level, access to resources, and enough staff to maintain a diversified program. It is too early to know the results of the program but NPI tests show students became interested in MR. (No refs.) - G. Trakas.

Nebraska Psychiatric Institute
University of Nebraska
Lincoln, Nebraska

24 Spencer, D. A. Mental subnormality as a specialty. British Medical Journal, 1(5532):110-111, 1967. (Letter)

There is a dearth of experienced applicants for medical positions in the 200 hospitals serving 60,000 patients with subnormality. Hospitals for the mentally subnormal are no longer places of custodial care, but increasingly treatment institutions offering research opportunities, and opportunities for expanding advisory and outpatient services. More links with teaching centers are recommended. (No refs.) - J. Snodgrass.

Westwood Hospital
Bradford, England

25 Bland, J. S. Mental subnormality as a specialty. British Medical Journal, 1(5540):635, 1967. (Letter: comment on letter by D. A. Spencer)

Previous opinion that the specialty is poorly "sold" and that a wealth of material for research and clinical practice exists is supported. Approaching the problem through university affiliation is essential and has proven to be effective. (No refs.) - J. Snodgrass.

Woodlands School
New Westminster, B. C.
Canada

26 Zucman, Elisabeth. Les consultations hospitalières spécialisées. (Specialized hospital consultations.) Nos Enfants Inadaptes, 22(2):18-19, 1967.

Specialized hospital consultations have been created (1) to help the severely and trainable MR achieve his potential through prolonged care and guidance and (2) to help the family understand and prepare for their child's future. Consultations of the CESAP are restricted to children under 15 whose IQ is less than 50. With children under 6, the cause of retardation is sought in order that medical treatment and sensori-motor reeducation (kinestherapy) may be instituted. Continued contact is necessary in all cases for differential diagnosis and treatment. In many cases there are secondary symptoms, behavior problems, or physical defects which make the services of a team of specialists (doctor, psychologist, educator, and social worker) invaluable for the child and his family. (No refs.) - C. A. Pepper.

No address

27 Catalog of Audio-Visual Aids for Counselor Training in Mental Retardation and Emotional Disability. Volume 1: Films. Prepared by the Devereux Foundation Institute for Research and Training. Devon, Pennsylvania, Devereux Foundation Press, No date, 104 p.

Several hundred films appropriate for use in university counselor-training programs and in-service training programs for staff working with the mentally and emotionally handicapped are listed. Brief annotations include running time, black and white or color, distributor, and year of preparation. Film titles are indexed in terms of subject area. Films related directly to MR include: 9 on attitudes, 3 on developmental patterns, 3 on general aspects, 5 on medical aspects, 10 on recreation, 41 on training, and 11 on clinical types. (No refs.) - J. Snodgrass.

CONTENTS: Film Listing; Subject Index; Mental Health Authorities (State and Territorial); List of Distributors.

28 Gutman, Ernest M. A Travel Guide for the Disabled. Springfield, Illinois, Charles C. Thomas, 1967, 133 p. $5.75

The disabled no longer need to be homebound shut-ins for an experienced wheelchair traveler describes the "hows" of a European tour to France, Italy, Switzerland, and England. Special facilities and disadvantages discussed for the physically disabled are modes of transportation, hotels, and availability of medical services for Paris, Rome, Zurich, Lucerne, Bern, Geneva, and London, including the number of steps involved. Additional details include: temperature charts, time changes, money conversion, passport arrangements, required clothing, and a few idiomatic expressions. Convenient restaurants, shops, and sightseeing areas are indicated as well

as foods, drinks, and tipping policies. Interest would extend to all those involved in planning and providing travel for the disabled. (No refs.) - C. A. Pepper.

CONTENTS: So You've Got the Urge; Take a Cruise--Tranquilizers Overboard! Foreign Hinterlands: Preparation and Planning; Lafayette, I Am Here; The Glory That Still is Rome; Cantons of Peace--Switzerland; London Environs; Your Driving Alliance; Vistas--U.S.A.; Melange of Miscellanea.

29 Hunt, Nigel. The World of Nigel Hunt: The Diary of a Mongoloid Youth. New York, New York, Garrett Publishing, 1967, 126 p. (Price unknown)

This book is a series of autobiographical essays that form a diary written and typed by a mongoloid boy in Great Britain. The foreword, written by L. W. Penrose, indicates the importance of this publication as both a human document and one that initiates scientific interest. This 12,000 word description of the boy's experiences indicates that Nigel was able to read at the age of 7. He was taught to read by his mother who used the phonetic approach. He repeated the sounds and words in connection with the object and also used plastic letters. His experiences in a special school for educationally subnormal children were poor due to the attempts to underestimate his performance and the resulted in poor incentives and motivation. The basic purpose or theme of this small volume is that "mongoloids" can learn and go on learning if they are given encouragement and proper training. Nigel's abilities, especially his knowledge of words both English and foreign, indicate that with good educational opportunities mongoloids are able to make more progress than has been predicted; however, certain characteristics such as lack of generalization can be noted. Nigel's social and mental development exceeded all professional predictions which illustrates the difficulty in predicting from classifications and labels. As a result of these descriptions, prognosis for educational advancement of children with similar problems may be dependent upon selection of proper teaching techniques and opportunities as well as interest and motivation of the teacher. A stereotyped picture of their abilities may have reduced our attempts to provide suitable education. Mentally defective children may be able to progress beyond the predictions of "experts." (No refs.) - B. Bradley.

CONTENTS: Foreword; Preface; Introduction; Lost in London--and in Innsbruck; Royal Windsor; Holidays Abroad; The Pop Music; My Parents; Atholl School; The Years to Remember; and The United States of America.

MEDICINE AND ALLIED SCIENCES

DIAGNOSIS (GENERAL)

30 Alter, Milton, & Bruhl, Heinz H. Dermatoglyphics in idiopathic mental retardation. American Journal of Diseases of Children, 113(6):702-706, 1967.

No distinguishing dermatoglyphic features could be found between 373 institutionalized patients with idiopathic MR and 200 normal volunteers. MR Ss were selected from a MR population of 2,900 and all individuals with disorders that could be remotely associated with MR were rejected. Individuals with lateralizing neurological disorders were not included. Dermatoglyphic features studied were total finger ridge count, finger patterns, hypothenar patterns, thenar/first interdigital patterns, second, third and fourth interdigital patterns, ATD angle, an a-b ridge count, palmar crease patterns, great toe pattern, and hallucal patterns. Two features were measured as different enough to show statistical significance, however, with the large number of inferences being tested, some would probably emerge on statistical analysis by pure chance alone. The 2 characteristics were an increased number of patterns in the second interdigital area of the right hand of MR males ($p < 0.005$) and a decreased number of unusual palmar creases in MR females ($0.02 < p < 0.05$). Although the dermatoglyphics did not differ in a group of idiopathic MR Ss as earlier reports had indicated, it is still unknown if a subgroup of MRs may show unusual dermatoglyphic patterns. (11 refs.) - R. Froelich.

Epidemiology and Genetics Unit
Division of Neurology
University of Minnesota
Minneapolis, Minnesota 55455

31 LeWinn, Edward B. The measurement of neurological development. International Journal of Neuropsychiatry, 3(2):149-151, 1967.

The measurement of neurological development was significantly advanced by Doman and Delacato whose theory operates on the principles

that each level of brain function must be intact for proper function and that criteria based on normal progression of development of basic functions are necessary. Six basic neurological functions are essential for normal human behavior. These are 3 motor functions: mobility, spoken language, and manual competence; and 3 sensory functions: visual competence, auditory competence, and tactile competence. All of these functions along with intellectual ability have to develop according to the appropriate chronological age or the child will appear abnormal and come to treatment. The Doman-Delacato Profile is an instrument which graphs these 6 neurological functions and 7 developmental levels to form a grid of 42 blocks. The developmental levels are chronologically and functionally related to the hierarchy of the central nervous system. The state of neurological development in this way can be quantified and provides a basis for determining at which point therapy should begin. The intellectual status of the child keeps pace with the position of functional abilities on the Profile. (No refs.) - R. Froelich.

Albert Einstein Medical Center
Philadelphia, Pennsylvania

32 Jabbour, J. T. Neurologic development as a basis for physical evaluation. In: American Association on Mental Deficiency, & U. S. Public Health Service, Mental Retardation Branch. Role of Physical Therapy in Mental Retardation. Proceedings of the Workshop for Physical Therapists held at the 90th Annual Convention of the American Association on Mental Deficiency, Chicago, Illinois, May, 1966, p. 3-12. Mimeographed.

Presence, absence, distortion, or persistence of responses, focal reactions, or neurological signs should provide clues as to the nature and location of a neurological abnormality. The underlying chemical, electrical, and cellular maturation must be understood in order to understand neurologic development. Growth of the skull reflects brain maturation. Morphological and cellular changes are demonstrated in increased skull and neuronal size and cortical width with the cellular growth related to amino acid and protein synthesis. Although various electrical rhythms appear with age in brain lobes, mixtures of rhythms decrease with age with more specific rhythms appearing in certain lobes. Over 50 percent of a child's total circulation supplies blood to his brain. Cranial nerve responses and feeding responses include the rooting reflexes, lip and sucking reflexes, swallowing reflexes, and oculomotor movement. Knowledge of postural reflexes maintaining the body orientation is important. These responses include flexor tone, vertical suspension and traction, placing reaction, and stepping reaction. Supporting reactions include the Moro reflex, the Landau reaction reflex, tonic neck reflex and hand responses. Sensory responses include deep tendon reflexes and the plantar response. Careful interpretation of these neurological features is essential for accurate diagnosis. (13 refs.) - R. D. Perkins.

Child Development Center
University of Tennessee
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Memphis, Tennessee

33 Cohen, Herbert J., Taft, Lawrence T., Mahadeviah, Maddur S., & Birch, Herbert G. Developmental changes in overflow in normal and aberrantly functioning children. Journal of Pediatrics, 71(1):39-47, 1967.

When overflow involuntary movement was tested in 205 normal children and 124 aberrantly functioning children, it was found that those children with evidence of central nervous system abnormalities had an increased amount of overflow movement. The normal children ranged in age from 6 to 12 years and the clinical group ranged from 6 to 16 years. The latter group contained children with disorders of communication, suspected MR, behavior problems, and physical disabilities. Overflow involuntary movement was evaluated by observing the movement of a contralateral resting upper extremity when the S did 5 unimanual tasks. The test was applied to both hands and after each S was tested he was asked to try to inhibit the overflow. In normal Ss the overflow decreased with increasing age and by the age of 9 years any existing overflow could be inhibited on request. The subnormal children had significant delays in control of overflow. In general, the defective development in inhibition was correlated with mental age except for those children with neurological abnormalities. In these children the degree of defect was not related to degree of MR and appeared to be an indication of brain damage. (12 refs.) - R. Froelich.

Department of Pediatrics
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Bronx, New York 10461

34 Hervada, Arturo R. Nursery evaluation of the newborn. American Journal of Nursing, 67(8):1669-1671, 1967.

Careful examination by nurses in the newborn nursery aids early detection of diseases or

congenital anomalies that may lead to complications in newborns. The nurse is often the first professionally trained person to care for a newborn infant. The patient's chart should review the important aspects of the pregnancy and delivery in order to alert the nurse to potential complications. General evaluation includes skin color (cyanosis or jaundice), proportionality, movement, respiration, and character of the cry. Careful evaluation of the eyes, ears, airway, chest, abdomen, and genitalia may provide signs of anomalies before an emergency exists. The initial evaluation of a newborn infant helps them become the normal children of tomorrow. (No refs.)

Hahnemann Medical College
and Hospital
Philadelphia, Pennsylvania

35 Early warning of hidden defects. Medical World News, 8(19):45, 1967.

Determination of serum immunoglobulin levels in neonates could make early detection of inapparent congenital infections possible. In a pilot study of 222 infants, 49 had immunoglobulin levels above 20 mg percent and 39 of these had infections. Only 7 of the 173 infants with low immunoglobulin levels had infections at the time of serum collection. Elevated immunoglobulin levels call for careful and long-term follow-up for detection of subtle findings resulting from fetal damage. (No refs.) - J. Snodgrass.

36 Statement on compulsory testing of newborn infants for hereditary metabolic disorders. Pediatrics, 39(4):623-624, 1967.

The American Academy of Pediatrics does not favor further legislation for the compulsory testing of newborn infants for the presence of phenylketonuria or other congenital metabolic disease. New knowledge can best be applied through professional and public education if sufficient financial support is available. Scientific research and knowledge should be made clearly distinct from public policy because of the innate differences between them. Any legislation in this area should be based on a sizable body of scientific fact. Before a screening program can be legislated as compulsory, adequate techniques and facilities must be present. Although the need for screening tests in the community may be great, the government should evaluate this need in relation to the current commitment of scientific resources. Legislation should not hamper scientific research or be overly directive in guiding what direction research should proceed. This subject is very significant because of the continuing impact medical research will make on infant and child care. (No refs.) - R. Froelich.

37 Ghosh, Shanti, & Daga, Sarla. Comparison of gestational age and weight as standards of prematurity. Journal of Pediatrics, 71(2):173-175, 1967.

Gestational age and birth weight of 2,273 single-born live infants provided the basis for dividing all infants into 7 groups and showed that weight alone is an inadequate criterion for assessing prematurity. The sample was biased toward the more educated, higher socioeconomic group of mothers in India. The mortality rate was 56.9 percent in the most premature group of infants (Group I) and was less than 1 percent in the most mature groups (Groups VI and VII). Groups IV and V contained infants of similar weight (2,001 to 2,500 grams) with different gestational age. Those infants with less than 37 weeks gestational age (Group IV) had a mortality of 4.69 percent as compared to 1.1 percent for Group V which had gestational ages over 37 weeks. Comparable findings occurred for Group II and III. Longer gestational periods within the same weight group are associated with lower mortality rates. Physiological responses were more mature for the longer gestation infants. It appears clear that the label, prematurity, cannot be determined from birth weight alone. (9 refs.) - R. Froelich.

Department of Pediatrics
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New Delhi, India

38 Lewis, Michael, Bartels, Betty, Campbell, Helen, & Goldberg, Susan. Individual differences in attention. American Journal of Diseases of Children, 113(4):461-465, 1967.

Attention testing at 3, 9, and 13 months demonstrated reduced attention in children with less than perfect (7-9) Apgar scores at birth compared to high (10) score Ss. Two observers independently evaluated total fixation time, number of fixations, and habituation in 41 Ss with film and matrix stimuli. Differences noted at 3 months generally persisted throughout the first year. Fine perceptual testing may allow better predictive discrimination of the Apgar score. (22 refs.) - W. A. Hammill.

Fels Research Institute
Yellow Springs, Ohio 45387

39 Lorentz, William B., *Simon, Jimmy L., & Benua, Richard S. Brain scanning in children. Journal of the American Medical Association, 201(1):5-7, 1967.

Ninety-seven children were subjected to brain scanning which appears to be a safe, accurate diagnostic procedure but one that has limited usefulness because of the high frequency of infratentorial tumors in children. The children ranged in age from 8 days to 14 years. Twenty-two scans were positive; of which 9 proved to be intracranial neoplasms, 4 were brain abscesses, 2 were cerebral artery thromboses, 1 was a subdural effusion, 1 was a cavernous hemangioma, 1 was a frontal arteriovenous malformation, and 4 were false-positive scans. False-negative scans were obtained in 2 confirmed infratentorial neoplasms, 4 suspected brain stem or pontine gliomas which were inoperable, 1 subdural effusion, and 1 with a cerebrovascular accident. All 4 supratentorial neoplasms in this series were detected by the scan. The 2 confirmed false-negative neoplasms were both cerebellar medulloblastomas. The major advantage of the brain scan is its high degree of safety as compared to air studies or angiography. It can be done for outpatient use and can accurately find location and size of tumors without altering intracranial pressure dynamics. There are a few disadvantages and the value in some disorders such as arteriovenous malformations and brain abscesses is not certain. (11 refs.) - R. Froelich.

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40 Trojaborg, W. Focal spike discharges in children: A longitudinal study. (Acta Paediatrica Scandinavica, Supplement 168.) Uppsala, Sweden, Almquist & Wiksells, 1966, 113 p. $4.83.

Age, location of spike discharges, cerebral palsy, and mental retardation increased the likelihood of subsequent seizures in a longitudinal study of 658 Ss (454 with spike discharges, 204 with normal EEGs). Migration and change in number of spike discharges were common. The highest incidence of spike discharges was seen in Ss less than 2 years old of whom 50 percent developed subsequent epilepsy. Anticonvulsant treatment did not influence the outcome of this group. Occipital foci were most common in Ss below 2 years. Occipital, temporal, and parietal foci were evenly distributed between the ages of 4-8, and after 8 years, temporal foci were most common. (154 refs.) - W. A. Hammill.

CONTENTS: Introduction; Clinical Material and Methods; Results; Discussion and Conclusions; Appendix--Selected Case Histories.

41 Neimann, N., Manciaux, M., & Gouilly, F. Interet de la transillumination dans l'etude de certaines affections intracraniennes du nourrisson. (Interest in transillumination in the study of certain intracranial problems of the nursing infant.) Archives Francaises de Pédiatrie, 24(5):531-542, 1967.

Cranial transillumination using a 150-watt lamp with adapter and cone has been studied in 2 groups of infants. The first group permitted an understanding of the normal infant's image under transillumination and consisted of 93 nurslings hospitalized for neurological problems. Twenty-three infants with intracranial problems were studied showing the image of different forms of intracranial pathology. Cortical atrophy, subdural effusions, and hydrocephalus were demonstrated by this method. Although precise etiologic information is not forthcoming from this examination, it proves to be an excellent screening test for intracranial disorders and tells whether or not more aggressive and painful methods are required. Because of its simplicity and innocuous nature, transillumination can be repeated serially, permitting observation of the evolution of lesions, judging the success of operations, and warning of eventual relapse. (29 refs.) - W. Asher.

Clinique de Pédiatrie et Puériculture
29, avenue de Lattre-de-Sassigny
54-Nancy, France

42 Higashino, Stanley M., & *Moss, Arthur J. Capillary microscopy. American Journal of Diseases of Children, 113(4):439-443, 1967.

Direct microscopy demonstrated abnormal microcirculation of the nailbed capillaries in Ss with mongolism, cystic fibrosis (CF), and congenital heart disease (CHD) in a study of 110 children. All 20 normal Ss had more than 80 percent normal nailbed capillaries, 19 of 23 Ss with CF demonstrated abnormalities and of these, 9 had horizontal subpapillary plexus. Thirty-three of 49 Ss with CHD were abnormal (unaffected by the type or severity of the cardiac disease). All 18 mongoloid Ss

had abnormal vessels. Horizontal subcapillary plexi were found in Ss with CF and CHD with cyanosis and in 12 of 18 Ss with mongolism. The mechanism of the capillary abnormality is unknown. Ready availability of this capillary bed allows direct visualization and good correlation with certain systemic disorders. (9 refs.) - W. A. Hammill.

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43 Cameron, M. D. Fetal electrocardiography: A survey of the literature. Developmental Medicine and Child Neurology, 9(3):329-337, 1967.

Fetal electrocardiography (ECG) offers new insight to the causes of fetal bradycardia and is superior to phonocardiography for evaluating fetal status. Abdominal electrodes are best during preganacy but, because of interference by uterine contraction, fetal scalp electrodes are necessary during labor. The maternal ECG can be cancelled electronically and computers can record, store, and evaluate multiple factors regarding fetal condition. Changes in configuration of the fetal QRS wave complex may precede changes in heart rate in fetal distress or may signify congenital heart disease. The equipment required is complex and costly, but provides a great deal of helpful information. (61 refs.) - W. A. Hammill.

Middlesex Hospital
London, W.1, England

PREVENTION AND ETIOLOGY (GENERAL)

44 Crome, L., & Stern, J. The Pathology of Mental Retardation. Boston, Massachusetts, Little, Brown, 1967, 406 p.

Basic factual material is presented on etiology, morphology, biochemistry, and laboratory diagnosis of MR extending from neonatal gestation disorders of the embryo and fetus to forms of retardation associated with birth injury to postnatal causes. The pathological aspects are considered in relation to biochemical abnormalities in body fluids (enzyme deficiencies), metabolic and neurometabolic diseases (accumulation of abnormal or excessive products in the tissue), lipidoses and leucodystrophies (progressive degeneration of neural tissue with accumulation of adventitious material containing abnormal amounts of lipids), and aminoacidurias (plasma level of the amino acids). The extensive appendices include detailed information of screening techniques for various syndromes, notes on neuropathologies and biopsy methods, and parameters of brain development and constituents. This extensive coverage of the pathology of MR, which should be of interest to all allied fields, includes most syndromes known in the field of MR, especially as they concern infants and children. (1,277 refs.) - C. A. Pepper

CONTENTS: The Genetic Causes of Mental Retardation; Disorders of Gestation; Birth Injury; Post-Natal Causes of Mental Retardation: General Considerations; Pathological Aspects: General; Non-specific Biochemical Abnormalities in the Body Fluids; Down's Disease; Hydrocephalus. The Phakomatoses; Metabolic Diseases; The Lipidoses and the Leucodystrophies; Aminoacidurias; Other Neurometabolic Diseases; Miscellaneous Conditions.

45 Koch, Richard. The multidisciplinary approach to mental retardation. In: Baumeister, Alfred A., ed. Mental Retardation: Appraisal, Education and Rehabilitation. Chicago, Illinois, Aldine Publishing, 1967, Chapter 2, p. 20-38.

After a child has been diagnosed as MR a multidisciplinary team composed of a pediatrician, psychologist, social worker, speech and hearing consultant, and public health nurse can evaluate the child's needs and potential and the family situation in order to help the parents to plan for the future. MR may be due to genetic, prenatal, neonatal, or postnatal factors. Genetic influences include chromosomal abnormalities (trisomy, monosomy, deletion, translocation, and triploidy) and inheritance patterns. Prenatal factors which may have an adverse effect on fetal development are maternal infection, nutrition, chronic illness, drug ingestion, radiation, trauma, anoxia, premature birth, toxemia of pregnancy, and blood incompatibility. The development of the newborn infant can be affected by maternal diabetes, toxemia, blood incompatibility due to an Rh factor, birth injury, respiratory depression, convulsions, and hypoglycemia. Postnatal brain damage which produces MR can be caused by infections of the central nervous system, trauma, poisons, anoxia, endocrine disorders, metabolic diseases, neoplasia, uncontrolled convulsive

disorders, and allergic reactions. Many postnatal factors can be controlled. (41 refs.) - J. K. Wyatt.

Children's Hospital
Los Angeles, California

46 Simon, G. B. Where biochemistry can help. Special Education, 55(4):17-21, 1966.

The relationship of biochemistry and mental subnormality is discussed in terms of its role in future research and etiological studies in Great Britain. The Rhesus factor is important in producing brain damage in the perinatal period. As a result of studies between various conditions and mental and physical handicaps, registers are kept of children who are said to be "at risk." This allows public health authorities to anticipate handicaps and to initiate treatment whenever possible. Biochemical disturbances are the cause of severe mental subnormality in about 4 percent of the cases although there is evidence of association in many additional cases. There are, broadly, 3 types of biochemical disturbances causing mental subnormality: primary metabolic errors, glandular dysfunction, and toxic effects. Examples of each type of disturbance include phenylketonuria and galactosemia, cretinism, and lead poisoning. Easily applied preliminary tests are necessary for diagnosis and elaborate and detailed studies are required if treatment measures are to be effective. Additional financial aid is needed for biochemical research. (5 refs.) - B. Bradley.

Lea Castle Hospital
Wolverly, England

ETIOLOGIC GROUPINGS

Infections, intoxication, and hemolytic disorders

47 Mosley, James W. The blood brain barrier in relation to viruses. Journal of the American Medical Association, 201(10): 769, 1967. (Editorial)

The blood brain barrier to viruses may depend more on the characteristics of the virus and the intracellular environment of the nerve cell than on the presence of a physical barrier. Many viruses will cause encephalitis if injected directly into the brain, but not if given intravenously or intraperitoneally. Others, however, are readily found in spinal fluid after intravenous inoculation. Neurotropism is a viral characteristic not dependent on ease of access to brain tissue. (2 refs.) - W. A. Hammill.

No address

48 Sever, John L. The epidemiology of rubella (symposium). Archives of Ophthalmology, 77(4):427-429, 1967.

Tremendous fetal damage is caused by rubella and particularly epidemics of rubella. Rubella occurs primarily in the spring of the year and epidemics generally occur every 7 years. Based on past epidemic cycles, the next major epidemic in the United States may be expected as early as 1970 or 1971. It is obvious that intensive programs are necessary to develop successful vaccines so that rubella may be prevented. (15 refs.) - (Source: Journal of the American Medical Association, 200(2):209, 1967)

Prenatal Research Branch
National Institute of Neurological Diseases and Blindness
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49 Rawls, William E., Phillips, C. Alan, Melnick, Joseph L., & Desmond, Mirdina M. Persistent virus infection in congenital rubella (symposium). Archives of Ophthalmology, 77(4):430-433, 1967.

Rubella virus infection in utero may lead to a generalized infection which can result in multiple congenital anomalies. The infection is also characterized by persistence of the virus, which may be excreted for as long as 18 months after birth. There appears to be an association between prolonged virus excretion and failure of the infants to thrive. It is postulated that the rubella virus infects a limited number of cells in utero. These cells are not destroyed but appear normal and give rise to clones of infected cells which have shown growth rates and a limited doubling potential. The virus is passed from parent to daughter cell during cell division thus maintaining an intracellular position which allows the virus to persist in the presence of antibodies. Slower growth rate of infected cells in vivo would account for the observed subnormal numbers of cells in organs of infants with congenital rubella and would also account for the slower weight gain after birth than that observed in

normal infants. (21 refs.) - (Source: Journal of the American Medical Association, 200(2):209, 1967)

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Houston, Texas 77025

50 Cooper, Louis Z., & Krugman, Saul. Clinical manifestations of postnatal and congenital rubella (symposium). Archives of Ophthalmology, 77(4):434-439, 1967.

The isolation of the rubella virus in 1962 studies of the natural history of postnatal provided techniques for (1) fundamental and congenital rubella, (2) evaluation of the efficacy of gamma globulin prophylaxis, and (3) the development of safe and effective vaccines. This paper summarizes recent advances in each of these areas. In addition it presents observations of 344 infants whose mothers had rubella during early pregnancy. Of this group, 271 infants had 1 or more congenital defects. Heart disease was detected in 142 (52 percent), hearing loss in 140 (52 percent), cataracts or glaucoma in 107 (40 percent), and neonatal thrombocytopenic purpura in 85 (31 percent). Rubella neutralizing antibody has persisted since birth. The incidence of virus excretion has decreased with increasing age declining from 84 percent in the first month to 11 percent at 9 to 12 months of age. (24 refs.) - (Source: Journal of the American Medical Association, 200(2):209, 1967)

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550 First Avenue
New York, New York 10016

51 Hastreiter, Alois R., Joorabchi, Bahman, Pujatti, Geremia, van der Horst, Ronald L., Patacsil, Gregorio, & Sever, John L. Cardiovascular lesions associated with congenital rubella. Journal of Pediatrics, 71(1):59-65, 1967.

Cardiac catheterization and cineangiocardiography on 37 infants who had cardiovascular lesions revealed pulmonary artery lesions in all cases, a patent ductus arteriosus in 75 percent, and aortic isthmus hypoplasia in 16 percent. Sixty-five percent of the infants had a maternal history of clinical rubella in pregnancy and exposure in an additional 14 percent. Exposure or rubella infection occurred between 3 and 9 weeks of gestation with 64 percent within the first month after conception. Microcephaly was present in 83 percent, obvious MR in 72 percent, deafness in 35 percent, cataracts in 54 percent, and microphthalmia in 30 percent. Almost all cases showed intrauterine and postnatal growth retardation. Rubella virus was isolated from 6 infants before 6 months of age. Pulmonary artery disease was strikingly diffuse rather than localized and the appearance of the right pulmonary artery was characteristic. Anatomical anomalies of the pulmonary artery system appear to constitute an integral part of congenital rubella when cardiovascular abnormalities are part of the syndrome. Thirteen patients had cardiovascular surgery, all survived and are showing considerable symptomatic improvement. (25 refs.) - R. Froelich.

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Chicago, Illinois 60612

52 Tron, Ph. La rubeole congenitale. II. - Etude clinique. (Congenital rubella II. - Clinical study). Archives Francaises de Pediatrie, 24(3):351-362, 1967.

Multiple studies during the past 20 years reveal that congenital rubella presents an extremely complex illness. The disease presents both malformations which are evident at birth and those which were apparently caused by intrauterine involvement but evolve after birth. Neurological manifestations have been more difficult to prove but authors have reported MR, convulsions, abnormal EEG, and microcephaly. It is still not evident why the rubella virus affects the embryo primarily during the first trimester of gestation despite being present throughout intrauterine life. Many of the congenital lesions are quite similar to those which evolve after birth in affected infants. Because of inability to separately categorize these lesions, it has been suggested that the terms malformation, embryopathy, and fetopathy be replaced by the general term "pre-natal virus infection." Isolation of the rubella virus in 1962 provided the ability to unquestionably prove the diagnosis of rubella infection in affected cases. The 1964 United States rubella epidemic provided an opportunity to describe the classical cardiac, ear, and eye malformations as well as thrombopenic purpura, anemia, liver, bone, cardiac, pulmonary, and nerve lesions which develop as sequellae to intrauterine infection. (37 refs.) - W. Asher.

Hôpital Parrot
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53 Plotkin, Stanley A., Cochran, Winston, Lindquist, Janet M., Cochran, Gloria G., Schaffer, David B., Scheie, Harold G., & Furukawa, Toru. Congenital rubella syndrome in late infancy. Journal of the American Medical Association, 200(6):435-441, 1967.

The clinical manifestations of congenital rubella infection differ as the children become older as evidenced by a study of 108 Ss with congenital abnormalities presumed due to maternal infection. Cardiac defects, cataracts, deafness, and MR are predominant in the younger Ss (0-1 yr) while hepatic, vascular, osseous, and pulmonary abnormalities are seen in the older Ss. Diagnosis in these Ss relies on serologic means. The virus neutralizing antibody titer was more accurate (94 percent) than the complement-fixation test (71 percent). Virus cultures were positive in the nasopharynx in 9 percent and in the spinal fluid in 4 percent of the Ss at 1 year of age. Seven of 15 Ss operated for cataracts had positive lens cultures. Serologic data is needed to find the titers of normal Ss with post-natal rubella infection. (21 refs.) - W. A. Hammill.

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54 Hughes, D. W. O'Gorman, Parkinson, R., Beveridge, John, Reid, R. R., & Murphy, A. M. The expanded congenital rubella syndrome: Report of two cases with neonatal purpura and review of the recent literature. Medical Journal of Australia, 1(9): 420-425, 1967.

Two cases of the expanded congenital rubella syndrome in infants are reported. Manifestations included amegakaryocytic thrombocytopenia, radiological changes of the long bones, and evidence of congenital heart disease in both, and microcephaly, MR, unilateral cataract and retinitis, hearing defect, hepatosplenomegaly with regurgitative jaundice, bilateral hydroceles, hypoplastic penis and normoblastemia in 1. Increased radiodensity of the skull and long bones was noted without any obvious radiotranslucency. (38 refs.) - (Source: Journal of the American Medical Association, 200(4):216, 1967)

School of Pediatrics
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Sydney, Australia

55 Nusbacher, Jacob, Hirschhorn, Kurt, & Cooper, Louis Z. Chromosomal abnormalities in congenital rubella. New England Journal of Medicine, 276(25):1409-1413, 1967.

Congenital rubella syndrome Ss have a higher incidence of chromosomal abnormalities than controls. Cytogenetic studies of leukocytes of 16 Ss (age 1 year) with congenital rubella (neutralization antibody titer and virus isolation) were compared with 6 normal controls, none of whom had recent virus infections. Eleven of 16 rubella Ss were MR. Chromosomal breaks were present in 7.3 percent of controls and 14.3 percent of congenital rubella Ss. Chromosomal abnormalities included chromatid gaps, isochromatid gaps, chromatid breaks, isochromatid breaks, attenuation of secondary constrictions, and propensity toward telometric associations. Virus induced chromosomal abnormalities may be causally related to the teratogenic effect of the maternal-fetal rubella infection. (36 refs.) - W. A. Hammill.

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56 Dudgeon, J. A. Maternal rubella and its effect on the foetus. Archives of Disease in Childhood, 42(222):110-125, 1967.

Rubella epidemics in America, Europe, and Australia have provided extensive information about the congenital rubella syndrome. Multiple defects are seen including: deafness, cardiac anomalies, microcephaly, MR, cataracts, developmental retardation, and hepatic, skeletal, and hematologic abnormalities. Twenty-four percent of Ss have multiple defects. Immunity to reinfection is probably complete and lasts indefinitely. Congenital defects arise from fetal infection with the rubella virus causing growth (mitosis) inhibition, cellular damage, and necrosis. Diagnosis can be made by virus isolation or serologic testing. The overall incidence of the rubella syndrome in infected mothers is 15 percent (30 percent if stillbirths and abortions are included). Passive immunization is of value if given before exposure, but not if clinical infection already exists. Recent studies with active immunization with attenuated virus offer great promise for effective prophylaxis. (53 refs.) - W. A. Hammill.

Hospital for Sick Children
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London, England

57 Svedmyr, Arne, & Thorén, Claes. Rubella immunity of pregnant women in Stockholm. Acta Paediatrica Scandinavica, 56(4):405-407, 1967.

The frequency of rubella neutralizing (NT) antibody was 87 percent in both a group of 54 pregnant women seeking immune prophylaxis and in a group of 104 normal pregnant controls. The women seeking prophylaxis were exposed to rubella during their first trimester and did not know if they previously had had rubella. Free gamma globulin is available in Sweden for these circumstances. The control group was randomly selected. The mean age for the groups were 27.9 and 26.1 years respectively. All 38 individuals in the control group who stated that they had previously had rubella also had NT antibody. Fifty-two of the remaining 66 also were seroimmune. The incidence of seroimmunity among the prophylaxis cases was not significantly different from controls with no known history of rubella infection and was significantly lower ($p < 0.01$) than in control subjects with a history of rubella. (6 refs.) - R. Froelich.

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Stockholm 1, Sweden

58 Test for detecting immunity to German measles developed. Our Children's Voice, 22(1):9, 1967.

The recently developed rubella hemagglutination-inhibition test allows rapid determination as to whether an expectant mother has antibody protection against rubella. Potential uses include the testing of women prior to marriage so that those lacking immunity may seek protection when a vaccine is available and the testing of experimental attenuated virus preparations as to their effectiveness. Simplicity, speed, sensitivity, and reliability are the major attributes of the test. (No refs.) - A. Huffer.

59 Banatvala, J. E., Best, Jennifer M., Kennedy, Elizabeth A., Smith, Elizabeth E., & Spence, Marjorie E. A serological method for demonstrating recent infection by rubella virus. British Medical Journal, 3(5560):285-286, 1967.

A method of detecting the presence of recently acquired rubella antibody by hemagglutination-inhibition (HI) tests involves early and late convalescent sera titrated in parallel before and after treatment with 2-mercaptoethanol (2ME). This sulphydryl-reducing compound breaks down IgM immunoglobulins. Serial serum samples from 21 patients with rubella infection were drawn at intervals from onset. Sulphydryl reduction was demonstrated by treating sera with one-tenth volume 0.5 molar 2ME for 1 hour at 37 degrees centigrade. Results showed 18 (85.7 percent) reductions in antibody titre after treatment with 2ME and were confirmed by double blind technique. Treatment with 2ME may be especially useful in assessing the duration of antibody in single serum samples obtained during the early stages of illness. Used in conjunction with virus and other isolation tests, it may be particularly useful in the seriological assessment of mothers contracting rubella during pregnancy. (12 refs.) - W. Asher.

Clinical Virology Laboratory
Department of Medical Microbiology
St. Thomas's Hospital
London, S.W. 1, England

60 Against rubella. Children, 14(1):38, 1967. (Editorial)

The hemagglutination-inhibition test is a new, sensitive, reliable, inexpensive test for immunity to rubella developed by the National Institutes of Health of the U. S. Public Health Service. The development of vaccines against rubella may be accelerated due to the rapidity with which the effectiveness of attenuated virus can be determined. A project is following the natural course of congenital rubella in 96 children who show defects in: vision and hearing (26); vision only (9); hearing only (33); and the heart (71). (No refs.) - J. Snodgrass.

61 Stokes, Joseph, Jr. Measles vaccines: Assured safety. Science, 157(3789): 626-628, 1967. (Letter: comment on letter by Albrecht)

Fears concerning carefully controlled and licensed live attenuated viral vaccines are unfounded. Long-term controlled field trials of the measles virus vaccine have been reported and no extraneous viral agents of disease are known to be present in the chick tissue cultures used for vaccines. The program to eradicate the disease should be supported. (10 refs.) - A. Huffer.

No address

62 Schneck, S. A., Fulginiti, V., & Leestma, J. Measles virus and panencephalitis. Lancet, 7504(1):1381-1382, 1967. (Letter)

Case material is presented which suggests a possible link for further study between measles virus and subacute sclerosing leucoencephalitis. Three weeks after vaccination with live attenuated measles vaccine with gamma-globulin, a 6-year-old boy developed dysphasia, dyslexia, dysarthria, akinetic and generalized seizures, myoclonic jerks, periodic EEG complexes, and a paretic gold curve in the cerebrospinal fluid. He became decerebrate and died 17 months after onset of symptoms. Autopsy revealed changes typical of subacute sclerosing leucoencephalitis; no inclusion bodies were seen. (6 refs.) - J. Snodgrass.

University of Colorado Medical School
Denver, Colorado 80220

63 Encephalitis hits long after measles. Medical World News, 8(34):78, 1967.

Evidence suggests that measles virus may produce a latent infection which is finally manifested as Dawson's inclusion-body encephalitis. Dr. J. W. Freeman at Stanford University has studied 4 patients with inclusion body encephalitis who demonstrated inclusion bodies with tubules inside that are similar to myxoviruses of the rinderpest-distemper-measles group. Immunofluorescent tests with antimeasles serum was confirmatory. All patients had measles many years before. The rinderpest-distemper viruses were considered unlikely causes of the infection. Treatment with the antivirus drug, 5-bromo-2-deoxyuridine, arrested progression of the disease and patients showed some improvement. Further evidence from the University of Colorado suggests a relationship between measles vaccination with attenuated virus and encephalitis. At present a definite link between measles vaccination and subacute sclerosing leukoencephalitis cannot be proved. (No refs.) - R. Froelich.

64 Freeman, J. M., Magoffin, R. L., Lennette, E. H., & Herndon, R. M. Additional evidence of the relation between subacute inclusion-body encephalitis and measles virus. Lancet, 2(7507):129-131, 1967.

Two patients with severe neurological disease found at brain biopsy to be subacute inclusion-body encephalitis had electron microscopic, immunofluorescent, and immunological evidence of infection with measles virus. One was a 7-year-old boy with a history of rubeola at 18 months of age after which he had personality changes and deterioration to a comatose, decorticate state. A 12-year-old boy had rubeola at age 4, and over a 9-month period developed seizures, rapid intellectual deterioration, and a semicomatose quadriparetic state. Light microscopy revealed numerous intranuclear and cytoplasmic inclusions in neurones, astrocytes, and oligodendrocytes. Electron microscopy showed filamentous structures within the intranuclear inclusions that were tubular and identical in morphology to those seen in measles-infected cells. These are the nucleocapsids of the group II myxoviruses (measles, distemper group). Immunofluorescent studies demonstrated measles-virus antigen by both direct and indirect methods using several measles antisera from different animals. Both patients showed elevated measles antibody by 4 serological methods. Animal innoculation studies were negative at 5 months after innoculation. The association between subacute inclusion body encephalitis and measles is strongly suggested and, in these 2 patients, may be latent infection which has become reactivated. (9 refs.) - R. Froelich.

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65 Lipsey, Allen I., & *Bolande, Robert P. The exfoliative source of abnormal cells. American Journal of Diseases of Children, 113(6):677-682, 1967.

Three children with fatal measles were found to have measles virus antigen in exfoliative cells of urinary sediment which came from the transitional mucosa of urinary bladder, ureter, and renal pelvis, in cells from the proximal and collecting tubules, and in parietal epithelium of Bowman's capsule. The children included a 3½-year-old boy with lymphoblastic leukemia, giant cell pneumonia, and hepatic cirrhosis; a 10-month-old boy with Swiss-type agammaglobulinemia, and giant cell pneumonia; and a 3-year-old boy with congenital agammaglobulinemia and giant cell pneumonia. Three children between 1 and 3 years of age who died of other disorders were used as controls. The diagnosis of measles was confirmed in the 3 study patients by the presence of giant cell pneumonia and the immunofluorescent localization of measles virus in these cells. Urinary sediment cells were studied by light microscopy and immunofluorescent methods. Multinucleated cells were identified as coming from the bladder mucosa and collecting tubule. Nuclear fluorescence was demonstrated in bladder transitional cells. The light microscope was not nearly

as sensitive or specific in detecting abnormal cells. The diagnostic test for measles using immunofluorescent techniques as described by Llanes-Rodas and Liu is the most sensitive and specific of the urine tests. (15 refs.) - R. Froelich.

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66 Cangir, Ayten, *Sullivan, Margaret P., Sutow, Wataru W., & Taylor, Grant. Cytomegalovirus syndrome in children with acute leukemia. Treatment with floxuridine. Journal of the American Medical Association, 201(8):612-615, 1967.

Evaluation of the effects of floxuridine therapy on both proven and suspected cytomegalic viral infection (CMV) in 5 children under age 10 who have acute leukemia suggests prompt clinical response to the drug. Case reports show that CMV was isolated in 2 of 5 children treated. Clinical findings of cytomegalic inclusion disease (CMID) in 3 remaining cases invoked the use of floxuridine in hopes of preventing fatal outcome. All 5 patients showed prompt resolution of pneumonitis by roetgenographic evidence. Concomitant use of prednisone with floxuridine to shorten the course of viral infection is suggested. The incidence of CMID has shown significant increase in patients receiving immunosuppressive drugs. Data indicate that risk of CMV syndrome can be substantially reduced by intermittent intensive anti-leukemic chemotherapy with treatment period not exceeding 4 weeks followed by a recovery of 10 to 14 days with no therapy so that immune competence can be regained. Treatment of CMV syndrome with new drugs which inhibit deoxyribonucleic acid such as cytarabine hydrochloride is proposed. (9 refs.) - W. Asher.

*6723 Bertner
Houston, Texas 77025

67 Jack, I., Turner, Elizabeth K., Danks, D. M., Maddison, T. G., & Colebatch, J. H. Cytomegalovirus infection in Melbourne children. Australian Paediatric Journal, 3(2):61-69, 1967.

Of forty-seven children with cytomegalovirus (CMV) infection, 5 died and 16 of the survivors were MR. The laboratory examined 426 specimens (usually urine) in which there was clinical suspicion of CMV. The CMV was identified by cell culture and microscopic examination of living cultures. Twenty cases were definitely infected in utero. Ten of these had classical signs of CMV with jaundice, hepatosplenomegaly, petechial hemorrhages, thrombocytopenia, and cerebral disturbances. One was stillborn, 3 of 8 survivors were MR, and 1 had Turner's syndrome. The other 10 infants had a single organ system involved, usually the liver, and 2 had slow mental development. One who died had microcephaly and 1 survivor with hydrocephalus had normal intelligence. Nine infants had probable intra-uterine infection but this was only inferred since they were not examined before 6 months of age. Five in this group were MR. Of 7 older children with postnatal CMV infection, 2 had leukemia and 1 had hereditary spherocytosis. Eleven children had an unknown mode of infection. Four of these exhibited MR in the second year of life. Eight healthy family contacts were discovered to excrete CMV. The MR found in the children in this series is considered to be a sequela to CMV infection. Nine of the infants with definite intra-uterine CMV infection had clinically normal intelligence although it may be too soon to detect minimal damage. (13 refs.) - R. Froelich.

Royal Children's Hospital
Melbourne, N.2, Australia

68 Hildebrandt, Richard J., Sever, John L., Margileth, Andrew M., & Callagan, Dwight A. Cytomegalovirus in the normal pregnant woman. American Journal of Obstetrics and Gynecology, 98(8):1125-1128, 1967.

Cytomegalovirus was recovered in 7 of 210 maternal urine samples and in 1 of 130 neonate urine samples but no significant relationship was found with infant mortality. A total of 375 pregnant women were studied for serum antibody. The infant with viruria at time of delivery had hypospadias which was the only abnormality found among infants born to the 7 women with viruria. One other infant developed viruria at 6 weeks of age which continued for 5 months. One infant without viruria had transient jaundice from anti-C blood group incompatibility. Of 170 single maternal sera tested at delivery, 57.1 percent were positive for complement fixing antibody. A total of 375 sera were tested with 51.8 percent positive. The 1 infant with persistent viruria also had a high antibody titer. Excellent correlation was found between neutralizing and complement fixing antibody. Previous reports have always associated the isolation of cytomegalovirus in newborn infants with disease including liver abnormalities. This study is the first report of virus infection in normal infants. Four women with viruria had paired sera and showed no significant change in antibody levels which

suggests that fetal infection preceded the third or fourth month of gestation. (10 refs.) - R. Froelich.

Section of Infectious Diseases
National Institute of Neurological
Diseases and Blindness
Bethesda, Maryland

69 Sinha, Shyamal K., Toussaint, John B., & Preizler, Josef. An epidemiologic study on viral hepatitis in an institution for the mentally retarded. American Journal of Mental Deficiency, 72(1):114-121, 1967.

Over a 17-month period (April, 1964--August, 1965) 22 cases of viral hepatitis occurred among nursing service personnel at Central Wisconsin Colony. During the latter phase of the epidemic, 2 icteric and 8 anicteric cases of viral hepatitis were recognized among the patient population. Both epidemiologic and serum studies support the hypothesis that a reservoir of hepatitis had built up among young mentally retarded children in 1 building without reflecting itself in obvious icteric illnesses among these children. The occurrence of 22 cases among nursing service personnel was probably a result of exposure through working contact in the Nursery building. (7 refs.) - (Source: AJMD)

317 Knutson Drive
Madison, Wisconsin 53704

70 Cordero, Leandro, Cuadrado, Raul, Hall, Caroline B., & Horstmann, Dorothy M. Primary atypical pneumonia: An epidemic caused by Mycoplasma pneumoniae. Journal of Pediatrics, 71(1):1-12, 1967.

An epidemic of Mycoplasma pneumoniae infections which occurred in an institution for MR, showed that the highest incidence of pneumonia occurred in the youngest groups and in those with Down's syndrome. The epidemic was followed serologically by the tetrazolium reduction inhibition (TRI) and direct hemagglutination inhibition (HI) tests which seemed more sensitive than the complement fixation test. Infection rates among the 5- to 18-year-old group that were exposed were 90 percent with the younger children having the highest incidence of pneumonia. In a cottage with an average age of 9 years, 28 percent developed pneumonia. Infection rates among exposed adults was 64 percent with an incidence of pneumonia in 7 percent. The incidence of pneumonia among 15 mongoloid children was 57 percent. The course of the disease, however, was similar to other children. In terms of antibody conversions and the general increase of titer, the TRI and HI tests correlated fairly well. This epidemic followed the typical pattern of occurring in the late summer and autumn involving cottages with high and middle grade MRs who practiced considerable social interchange. The incidence of pneumonia was unusually high compared to other populations. A rapid, cold agglutinin test was found to be a useful screening test for Mycoplasma pneumoniae infection. (23 refs.) - R. Froelich.

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71 Pickup, J. D., & McWilliam, P. K. A. Intrathecal and intramuscular ampicillin in the treatment of Haemophilus influenza meningitis in infants. Postgraduate Medical Journal, 42(May):312-313, 1966.

Four infants between the ages of 8 and 15 months with Hemophilus influenzae meningitis were treated successfully with intrathecal and intramuscular ampicillin given in relatively high doses. All 4 presented with a typical clinical picture of meningitis. This included a few days of upper respiratory infection followed by drowsiness or irritability, neck stiffness, fever, and vomiting. One child had a convulsion. Cerebrospinal fluid (CSF) showed a leukocytosis in all cases. Hemophilus influenzae was identified in the CSF of 2 patients and cultured in the other 2. CSF ampicillin assays were taken 12 hours after the first intramuscular dose of ampicillin and 24 hours after the intrathecal doses. The ampicillin levels varied widely between 13.8 mcg/ml and 0.1 mcg/ml. All patients recovered but 1 had a relapse which required recommencement of ampicillin treatment. It has been suggested previously that a CSF ampicillin level of over 0.4 mcg/ml should be maintained for inhibition of Hemophilus influenzae. Only 1 of these cases had a concentration of 0.4 mcg/ml maintained throughout the course. A dose of 10 mg intrathecally daily and 250 mg intramuscularly every 6 hours is thought to be required for treatment of this condition. (4 refs.) - R. Froelich.

Pontefract General Infirmary
Yorkshire, England

72 Cocchi, P., Bartolozzi, G., Taylor, J., & Bettelheim, K. A. Meningitis in premature infants caused by new pathogenic serotype E. coli. Helvetica Paediatrica Acta, 22(3):313-319, 1967.

Fatal meningitis in 3 premature infants was

caused by 2 serotypes of Escherichia coli not previously identified in human meningitis. The organisms were serotyped by tube dilution agglutination against sera of known O type. Two of the cases were type O-34 non-motile, the other O-78 H-2. Strain O-34 is entirely new in human pathology and strain O-78 has not been reported in human meningitis. Meningitis in newborn infants is a fulminant disease with high mortality (80-90 percent) primarily because of poor defense mechanisms (antibodies, complement, phagocytosis) especially in premature infants. (22 refs.) - W. A. Hammill.

Università di Firenze
Florence, Italy

73 Migeon, Claude J., Kenny, Frederic M., Hung, Wellington, Voorhess, Mary L., Lawrence, Betty, & Richards, Catherine. Study of adrenal function in children with meningitis. Pediatrics, 40(2):163-183, 1967.

An argument against using steroids for therapy in infectious diseases is upheld by a study of adrenal function in 67 children of whom those moderately to severely affected with meningitis showed a variable increase of cortisol production. The Ss' ages ranged from 1 month to 11 years. Meningococcal meningitis was most commonly present as the latter part of the study used only patients with this diagnosis. Plasma cortisol was increased in 7 children classified as moderately ill and in 12 of 19 who were severely ill. A total of 40 children had elevated plasma cortisol levels. Thirty-four of 48 children with meningococcal, Hemophilus influenza, or miscellaneous infections had increased plasma cortisol. The 8 children with aseptic meningitis had only a moderate increase in cortisol. Urinary excretion of 17-hydroxycorticosteroids was elevated in 2 of 44 children studied. The cortisol production rate was greatly elevated in most children and tended to be lower in antibiotic treated patients. Epinephrine excretion was normal or above in all 10 cases studied but norepinephrine was decreased in 4. Cortisol secretion was lost in 6 of 7 patients with massive adrenal hemorrhage. Of 12 children who died, all but 1 showed significant central nervous system pathology. (49 refs.) - R. Froelich.

Children's Medical and
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Johns Hopkins Hospital
Baltimore, Maryland 21205

74 Wright, R. Lewis, & Ballantine, H. Thomas, Jr. Management of brain abscesses in children and adolescents. American Journal of Diseases of Children, 114(2): 113-122, 1967.

The symptomatology, diagnosis, and treatment of 30 children with brain abscess is described and shows that prompt surgical excision of the whole abscess is the most effective treatment. All patients younger than 17 years old with brain abscess treated between 1946 and 1965 were included. The incidence of brain abscess has remained stable. The presumed source of infection was chronic otitis in 11, frontal sinusitis in 3, congenital heart defects in 4, and subacute endocarditis in 1. The initial symptom was headache in 22, drowsiness in 5, and seizures in 3. Characteristics of cerebellar and frontal lobe abscesses were headache, nausea, and vomiting. Cerebrospinal fluid evaluations were carried out in 23 patients and were completely normal in 3. One of the survivors was MR from birth. Four children treated only with antibiotics died. Of the 26 treated surgically, 7 died. Total excision as the initial treatment in 11 patients resulted in all surviving. Of the 15 patients treated by aspiration and drainage, 7 died, 2 recovered, and 6 required total excision. Ten of the 13 patients surviving cerebral abscesses had temporary neurological sequalae, 2 of which were permanent. Except for the MR patient, no intellectual impairment occurred in any of the survivors. (20 refs.) - R. Froelich.

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75 A case of haemolytic disease with congenital rubella. British Medical Journal, 2(5555):819-822, 1967.

A newborn male infant with severe hemolytic disease, pulmonary hypoplasia, meconium peritonitis, and possible intrauterine rubella infection was presented at clinicopathological conference. The mother was Rh negative and had received a transfusion of Rh positive blood at 11 years of age. The infant was her sixth pregnancy. She developed rubella at 17 weeks of pregnancy. An intrauterine peritoneal transfusion was carried out at 26 weeks gestation and cesarean section was performed at 32 weeks. The infant was in poor condition and died 6 hours after birth. Autopsy showed an enlarged liver and spleen and a small brain in addition to the other findings. Development of the rubella syndrome as

late as 17 weeks gestation is unlikely, however many of the findings are more consistent with rubella infection including the low platelet count, skin petechiae, gland enlargement, spleen and liver enlargement, and an increased gamma-M globulin in utero. Some type of infection involving the infant seems likely particularly since the mother had salpingitis. The rubella syndrome can cause a form of hemolytic disease of the newborn which is significant in this case since there is insufficient evidence of Rh incompatibility. (No refs.) - R. Froelich.

76 Hobbs, J. R., & Davis, J. A. Serum gamma G-globulin levels and gestational age in premature babies. Lancet, 1(7493):757-759, 1967.

A comparison of the gamma G-globulin levels in the serum of 106 premature infants and several full-term infants showed that the gamma G-globulin levels are depressed in the premature. The levels were measured by electrophoresis. The logarithms of the gamma G-globulin levels were linearly related to gestational age. The relationship between birth weight and gamma G-globulin levels was generally the same, but was not as clear. Several of the infants were given intramuscular injections of 250 mg of exogenous gamma globulin as prophylaxis against subsequent infections. This treatment appeared to be of some benefit. The intramuscular gamma globulin is sometimes needed because the endogenous levels decrease within the first 6 months following birth. In premature infants (gestational age 32 weeks or less) who are born with very low levels, these subsequent levels may be dangerously low. (15 refs.) - H. West.

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77 Moe, Peter Johan. Umbilical cord blood and capillary blood in the evaluation of anemia in erythroblastosis foetalis. Acta Paediatrica Scandinavica, 56(4): 391-394, 1967.

Umbilical cord blood was found to be a more sensitive indicator of anemia among infants with erythroblastosis fetalis than capillary blood. Cord blood was examined from 72 healthy infants and 54 erythroblastotic infants. Capillary blood was examined from 36 healthy infants and all the erythroblastotic infants. Hemoglobin, hematocrit, and red blood cell counts were higher in capillary blood of both normal and erythroblastotic infants than that found in cord blood. Forty-one erythroblastotic infants received an exchange transfusion. Of these, 25 showed anemia on cord blood examination but only 14 showed an abnormally low hemoglobin in their capillary blood. It appears from this study that umbilical cord blood is preferable in order to demonstrate a moderate anemia. The reason for this is not clear but may be a manifestation of placental transfusion of the infant. The capillary samples were obtained from unwarmed heels and may be a more sensitive indicator than if warming of the heels is done before sampling. Heparinized cord blood should be saved in cases of suspected erythroblastosis. (12 refs.) - R. Froelich.

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Bergen, Norway

78 Stratton, F., & Renton, P. H. Serologic tests in relation to prenatal and postnatal diagnosis of hemolytic disease of the newborn. Clinical Pediatrics, 6(6): 331-339, 1967.

Antenatal detection of blood group incompatibility and prediction of severity of reaction is valuable in hemolytic disease of the newborn. Rh incompatibility can be accurately predicted by present techniques, however ABO and other types of reactions are more difficult to assess. Only gamma G antibodies can cross the placenta and produce hemolytic disease, thus knowledge of the type of antibody is of predictive value. Generalized screening procedures are available for detecting only Rh negative, immunized mothers. Laboratory and clinical signs of progressive maternal immunization may indicate termination of pregnancy or intrauterine transfusion to prevent the complications (brain damage and anemia) of severe hemolysis. (12 refs.) - W. A. Hammill.

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79 Prevention of rhesus haemolytic disease. Lancet, 1(7497):993-994, 1967.

Anti-D gamma-globulin prevented immunization in 400 Rh-negative mothers in their first pregnancy while 400 untreated control mothers showed a rate of 13 percent immunization. The risk of serum hepatitis to donors can be reduced by always immunizing from a donor whose blood has not produced jaundice in a

recipient of a transfusion. Indications for use of rhesus immunization and the question of supplying antiserum on a large scale are still unsettled. (4 refs.) - J. Snodgrass.

80 Ose, Toru, Tsuruhara, Tsuneo, Araki, Masayoshi, Hanaoka, Toshiyuki, & Bush, Ovid B., Jr. Follow-up study of exchange transfusion for hyperbilirubinemia in infants in Japan. Pediatrics, 40(2):196-201, 1967.

A follow-up study of 157 infants treated by exchange transfusion for hyperbilirubinemia in Osaka, Japan found a definite relationship between the level of bilirubin and the development of cerebral palsy (CP) and developmental retardation. The children were between 6 months and 7 years of age. Four questionnaires were not completed and 17 died (10.8 percent). One hundred thirty-one were examined. Mother-infant incompatibility was the cause of the hyperbilirubinemia in 69.4 percent. Of the 131 children examined, 17 had CP definitely caused in 11 cases by kernicterus with a serum bilirubin level over 20 mg/100 ml. Twenty-one children were retarded in functional development or communication ability. Fifteen (11.6 percent) had an IQ score below 90. All infants with developmental retardation had a bilirubin level over 20 mg/100 ml; 9 were in the compatible group. Of the 10 infants with a bilirubin level over 35 mg/100 ml, 9 were either MR or CP. Prematurity was more common in the compatible group (23 percent) than in the incompatible group (7.3 percent). The incompatible group had 49 percent normal children and the compatible group had 16 percent normal children. An exchange transfusion is indicated when bilirubin levels exceed 25 mg/100 ml for full-term compatible infants and 20 mg/100 ml for all other infants. (17 refs.) - R. Froelich.

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57 Awaji Honmachi 1-Chome
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81 Intrauterine transfusions save one Rh fetus in three. Medical World News, 8(1):41, 1967.

Analysis of the first 240 cases of transabdominal transfusion for erythroblastosis fetalis done at 10 major centers shows that 40 percent survived and were born alive while perinatal deaths in all such cases dropped from 15 percent to 8 percent. Further improvement may be expected as technical adeptness continues to improve. Surviving infants are still too young for adequate testing for the most serious complication--brain damage leading to MR. (No refs.) - J. Snodgrass.

82 Mandelbaum, Bernard, & Brough, A. Joseph. Hepatitis following multiple intrauterine transfusions. Obstetrics and Gynecology, 30(2):188-191, 1967.

A 16-day-old infant died of hepatitis which developed in utero following 4 intrauterine transfusions for Rh incompatibility. The infant was the fourth pregnancy with 1 previous abortion and 1 stillbirth. Bilirubin began increasing in the amniotic fluid at the twenty-fourth week and fetal transfusions were performed during weeks 25, 26, 30, and 34. A different professional donor was used each time and a total of 5 transfusions was done. The infant was delivered by cesarean section and was intensely jaundiced. He was anemic and demonstrated a leucocytosis of 46,718, a macrocytosis, anisocytosis, and polychromasia. He had hepatomegaly and the jaundice progressed. Four exchange transfusions were done with some temporary clinical improvement but the jaundice continued to progress. Autopsy revealed an active hepatitis and no findings to suggest other types of neonatal jaundice. A marked intracranial hemorrhage was found. The mother has remained well during the first 5 postpartum months. This has been the only instance of viral hepatitis after 150 prenatal transfusions and is the first known case to be verified. One mother has developed hepatitis which followed 3 months after a single intrauterine transfusion. As intrauterine transfusions become more commonly used this may be a more frequent complication. (3 refs.) - R. Froelich.

Child Research Center of Michigan
660 Frederick Street
Detroit, Michigan 48202

83 Reiquam, C. W., Beatty, E. C., Jr., & Connell, John R. Erythroblastosis fetalis. Elevated conjugated bilirubin, anemia and liver necrosis--relationships and clinical implications. Clinical Pediatrics, 6(7):411-423, 1967.

The mortality rate of 256 selected erythroblastotic infants with either anemia or elevated bilirubin was 17 percent compared to 1.2 percent for 726 erythroblastotic infants with neither anemia nor elevated bilirubin. The total population consisted of 1,000 newborn infants with erythroblastosis fetalis and Rh isoimmunization. There were 18 infants who died without complete laboratory

information which if added to the total group of 726 infants would elevate the mortality to 3.6 percent, still much lower than the selected group. Anemia was arbitrarily defined as a hemoglobin level of less than 13 gm/100 ml. Conjugated serum bilirubin was considered elevated when above 1 mg/100 ml. No cases of kernicterus were discovered at autopsy despite a total bilirubin level over 20 mg/100 ml in some cases. Those infants with a conjugated bilirubin level over 5 mg/100 ml continued to have elevated levels after exchange transfusions. When the conjugated or direct bilirubin exceeded 1 mg/100 ml, the mortality rate was 13.6 percent. There was a positive relationship in some cases between anemia and hepatic necrosis. The presence of anemia may require treatment with packed red cells before an exchange transfusion is done to relieve the hyperbilirubinemia. The most significant bilirubin fraction is the conjugated bilirubin which is closely associated with mortality. (12 refs.) - R. Froelich.

Presbyterian Medical Center
Denver, Colorado 80218

84 Schutta, Henry S., & Johnson, Lois. Bilirubin encephalopathy in the Gunn rat: A fine structure study of the cerebellar cortex. Journal of Neuropathology and Experimental Neurology, 26(3):377-396, 1967.

Fifty-five Gunn rats were found to have severe abnormalities of the Purkinje cells that were probably caused by bilirubin. The Gunn rat is a strain of Wistar rats that carry a recessive jaundice trait causing a deficiency of hepatic glucuronyl transferase when homozygous. Studies included light and electron microscopic examination of the cerebellum and other structures. Purkinje cell abnormalities consisted of bizarre membranous bodies and enlarged vacuolated mitochondria. No abnormalities were found in newborn animals and lesions occurred after serum bilirubin levels were increased for sufficient periods of time. This was 30 hours after birth for homozygous rats and 3 days after birth when mothers were heterozygous. Abnormalities were found in all jaundiced rats regardless of the degree of clinical brain damage but those rats with severe ataxia had more abnormal cells than those with absent or mild signs of brain damage. The basis of the damage caused by bilirubin probably is its effect on mitochondrial enzyme systems. The macroscopic appearance of jaundiced and control rat cerebellums did not differ up to 10 days of age at which time those animals with ataxia were found to have abnormally small cerebellums. (44 refs.) - R. Froelich.

Department of Neurology
Pennsylvania Hospital
Philadelphia, Pennsylvania

85 Kopito, Louis, Byers, Randolph K., & Shwachman, Harry. Lead in hair of children with chronic lead poisoning. New England Journal of Medicine, 276(17):949-953, 1967.

Of 17 children hospitalized with lead poisoning, 16 were confirmed by lead determination in hair, 15 of which could have been discovered weeks earlier if this relatively simple procedure had been done. Good correlation between the amount of lead in the hair and other clinical and laboratory studies was found including blood, urine, and radiographic studies. Hair concentrated more lead per unit weight than any other body tissue or fluid. In all but 1 child the lead in the hair varied according to the distance from the scalp from which the specific sample was taken. Such measurement gives an indication of the time that lead intoxication occurred. The hair lead determination was done by atomic absorption spectroscopy after appropriate physical and chemical preparation. The use of hair as a screening technique for possible lead intoxication is advantageous because it is easy to obtain, store, and analyze. A limitation is the lenth and quality of hair available particularly in Negro children. Although this procedure alone is insufficient to make the diagnosis of acute lead intoxication, it is most useful in chronic lead intoxication when used with radiologic observations particularly when other data are equivocal. (14 refs.) - R. Froelich.

Children's Cancer Research
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Boston, Massachusetts

86 Brady, June P., & Williams, H. C. Magnesium intoxication in a premature infant. Pediatrics, 40(1):100-103, 1967.

A mother treated with magnesium sulfate for pre-eclampsia gave birth to a premature infant with toxic effects of motor and respiratory paralysis caused by hypermagnesemia which were immediately reversed by lowering the serum magnesium level. Previous reports have listed magnesium sulfate as the drug of choice in pre-eclampsia without toxic effects on the fetus. The mother received 11 gm of magnesium sulfate during the 3 hours before

delivery. Gestation period was 30 weeks. The infant remained apneic and paralyzed to some degree until 24 hours after birth at which time an exchange transfusion produced an improvement. She began to move, kick, cry and had to be restrained to complete the transfusion. Magnesium levels in the serum were 15 mEq/1 at 9 and 16 hours of age and 9.8 mEq/1 at 24 hours of age. The beneficial effects of exchange transfusion may have been due to increased magnesium binding as well as a decreased total amount circulating in the body. (11 refs.) - R. Froelich.

San Francisco General Hospital
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87 Perry, John E., Toney, J. D., & Le Blanc, A. L. Effect of nitrofurantoin on the human fetus. Texas Reports on Biology and Medicine, 25(2):270-272, 1967.

Nitrofurantoin was not found to cause untoward fetal effects when 101 women taking the drug during their pregnancy were compared to 101 women who had not taken the drug. Mothers in the drug group had received nitrofurantoin 200 to 400 mg daily for treatment of asymptomatic bacteriuria. In the drug group there were 62 non-white and 39 white patients and in the control group there were 70 non-white and 31 white patients ($p > 0.05$). The mean ages were 25.4 and 23.1 years for the drug and control group respectively ($p < 0.05$). None of the mothers received nitrofurantoin during the first trimester of pregnancy. The mean length of treatment was 49.9 days with a median total of 11.2 g. The mean birth weight in the drug group was 3,112 g compared with 3,153 g in the control group ($p > 0.05$). The mean Apgar score for the drug group was 8.6 compared to 8.0 for the control group ($p < 0.01$). Lack of evidence of increased jaundice or congenital abnormality in the drug group indicates lack of toxicity or very little passing through the placenta. (4 refs.) - R. Froelich.

Division of Infectious Disease
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Galveston, Texas

88 Fällström, S. P., & Bjure, J. Endogenous formation of carbon monoxide in newborn infants. Acta Paediatrica Scandinavica, 56(4):365-373, 1967.

Carboxyhemoglobin (COHb) levels in 59 newborns with Rh hemolytic disease correlated sufficiently with the severity of the hemolytic disease to permit conclusions about infant risk from a COHb determination. No infants were premature. Only non-smoking mothers were included in order to reduce the influence of exogenous carbon monoxide. COHb levels were compared with 74 other healthy infants. Of 10 cord blood samples, 4 had COHb values more than 2 standard deviations from control values. Twenty-two of 26 day-old infants showed similar increases. Increased COHb correlated with signs of increased homolysis at delivery and during the first day. Thereafter many infants had increased COHb. During the first day the level of COHb correlated with increased bilirubin concentration, rate of bilirubin increase, percent of reticulocytes, and degree of anemia. After the first day the COHb levels correlated with bilirubin levels and degree of hemolysis. The increasing COHb concentration is concluded to be a reflection of an increased rate of erythrocyte destruction. An impaired ability to eliminate carbon monoxide through the lungs may be an additional factor. Although the COHb level is not a direct measure of erythrocyte survival, this test does measure the degree of hemolysis in hemolytic disease of the newborn. (29 refs.) - R. Froelich.

Department of Pediatrics
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89 Orth, David N., Almeida, Henderson, *Walsh, Frank B., & Honda, Masao. Ophthalmoplegia resulting from diphenylhydantoin and primidone intoxication. Journal of the American Medical Association, 201(6):485-487, 1967.

Four cases of partial or total ophthalmoplegia resulted from excessive doses of either diphenylhydantoin or primidone. Patient 1 was a 26-year-old woman with a 9-year history of seizures. Over a 2-day period she took an unknown overdose of diphenylhydantoin, primidone, and phenobarbital which resulted in marked periorbital edema and an inability to move her eyes. The external ophthalmoplegia gradually improved. Patient 2 was a 42-year-old man who had been taking diphenylhydantoin and primidone for 27 years. At age 41 he took 200 diphenylhydantoin tablets which were lavaged from his stomach. One year later he became confused, developed an ophthalmoplegia and was suspected of taking an overdose of diphenylhydantoin and primidone. Patient 3 was a 24-year-old man who took an overdose of diphenylhydantoin and phenobarbital after which he developed a complete external ophthalmoplegia. Patient 4 was a 34-year-old

woman with status epilepticus who had her doses of diphenylhydantoin, primidone, and phenobarbital increased considerably. She became toxic and was unable to move her eyes. All patients had nystagmus at some point and all recovered with discontinuation or decrease in medication. This is one of a long list of complications from anticonvulsant medications. (29 refs.) - R. Froelich.

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90 Fishman, Robert A., & Raskin, Neil H. Experimental uremic encephalopathy. Permeability and electrolyte metabolism of brain and other tissues. Archives of Neurology, 17(1):10-21, 1967.

Acute uremia produced a generalized increase in permeability of the blood brain barrier in a radioisotope study of nephrectomized animals. Forty-six hours after nephrectomy (the LD-50 time) the rats were injected with inulin ^{14}C, sucrose ^{14}C, sodium sulfate ^{35}S, sodium chloride ^{24}Na, and potassium chloride ^{42}K. Tissue concentration of these isotopes in liver, brain, heart, and muscle were analyzed as was brain adenosinetriphosphatase (ATPase). Blood electrolytes and the clinical picture were similar to human uremia. Permeability of the sugars was increased, but not the sulfate. Metabolic incorporation of sulfate was depressed due to the high plasma sulfate (non-labeled) content. Sodium transfer into the brain was decreased and brain potassium concentration was elevated but no change in ATPase was detected. This nonspecific increased permeability in uremia may allow entrance of toxic compounds into the brain and thus explains the central nervous system signs of uremia. (42 refs.) - W. A. Hammill.

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Trauma or physical agent

91 Gupta, J. M., & *Tizard, J. P. M. The sequence of events in neonatal apnoea. Lancet, 2(7506):55-59, 1967.

The Apgar rating did not clearly distinguish between primary and terminal apnea of 91 newborns who were apneic at 1 minute after birth. A total of 1,594 newborns were observed. Of the 91 newborns who were apneic at 1 minute, 23 had cried before the onset of apnea and all but 1 had regular respiration before leaving the delivery room. Of 60 infants who could be studied adequately, 42 had primary apnea and 18 had terminal apnea. Sixty-five deliveries were considered abnormal and 26 were normal. A high proportion of all infants had heart rates less than 100. In primary apnea the heart rate could either increase or decrease but in terminal apnea it only slowed. Those infants whose heart rate is increasing before resuscitative measures are taken and who respond to resuscitation by gasping before a change in color occurs are in the primary group. However, those infants with slowing heart rates and who are pink before gasping are not necessarily in terminal apnea. Endotracheal oxygenation is of use in apnea and can be demonstrated most clearly in terminal apneic newborn animals after the last gasp. (15 refs.) - R. Froelich.

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92 Cerebral metabolism and mental retardation. Journal of the American Medical Association, 199(5):112-113, 1967. (Editorial)

Nonspecific MR is associated with a generalized decrease in cerebral oxygen consumption and cerebral blood flow. Disruption of evolving syncytial patterns by an early pathological process results in multidimensional damage, however, and even revival of moribund cells would not be able to reverse and revise altered patterns of axonal growth and synapse connections. Research should focus on known hazards and disease and seek to define optimum physiologic aspects of fetal life and the total environment of the infant. (3 refs.) - J. Snodgrass.

93 Churchill, John A., Ayers, Melvern A., & Caldwell, Donald F. Intelligence of children whose mothers have biliary tract disease. Journal of the American Medical Association, 201(6):482-484, 1967.

A prospective, longitudinal study of children born of mothers with biliary tract disease found that their IQ was lower than the IQ of matched controls. Thirty-three women who had had cholecystectomies were studied; they had given birth to a total of 39 children. The presence of cholelithiasis was confirmed in all. Controls were matched for race, sex,

social class, maternal age, and order of birth. When a mother with biliary tract disease had more than 1 child, 1 child was selected for the study by random sampling. Children with birth weights under 2.5 kg were excluded. The mean IQ of the children from the maternal biliary tract disease group was 100.6 compared to 113.1 for the control group ($P<0.001$). When siblings and premature infants were included the difference remained statistically significant ($P<0.001$). Both verbal and performance sections of the WISC differed significantly. The severity of the biliary tract disease in the mothers was negatively correlated with their children's IQ ($P<0.001$). No differences in obstetric course or other parameters were found that would have caused the findings. The children were tested for IQ at a mean age of 7.4 and 7.6 years in the study and control groups respectively. Malabsorption of fats, particularly linoleic acid, may interfere with the lipid supply essential for fetal brain development. (3 refs.) - R. Froelich.

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94 Leslie, Loren. Prematurity as an etiologic factor in cerebral dysfunction. Archives of Physical Medicine and Rehabilitation, 47(11):711-714, 1966.

In an attempt to understand the significance of prematurity, its incidence is reviewed in both the normal population and those having cerebral dysfunction. A history of premature birth is obtained in approximately 19 to 35 percent of the latter. Various prenatal and neonatal factors predisposing the premature infant to disturbances of the central nervous system are discussed; perhaps the most important correlate of prematurity is the neonate's susceptibility to trauma. Other anatomic and physiologic handicaps of the premature infant are difficulties in regulation of body temperature, respiratory immaturity, and susceptibility to infection, any of which could have an effect on the central nervous system. A brief résumé of clinical and longitudinal studies of premature infants revealed that major neurologic and behavioral patterns of the neonatal infant have developed by the 27th week of fetal life. In healthy, premature infants rates and patterns of development are disturbed very little by the displacements of birth, and normal development occurs if the environmental and nutritional requirements are met in the extrauterine state. (17 refs.) - (Source: Rehabilitation Literature, 28(3):90, 1967.)

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1800 Chicago Avenue
Minneapolis, Minnesota 55404

95 Kolah, Pilloo J., Master, Perin A., & Sanghvi, L. D. Congenital malformations and perinatal mortality in Bombay. American Journal of Obstetrics and Gynecology, 97(3):400-406, 1967.

In a series of 23,568 registered births at a hospital in Bombay, India, the total percentage of congenital malformations was 1.40; rates in live births, stillbirths, and neonatal deaths were 1.02, 9.49, and 9.24 percent, respectively. In a series of 3,063 emergency births (those who had not attended the outpatient clinic at least once), the total percentage of malformations was 2.91--a significant difference from the registered group (chi-square, $p = .001$). In order, the most common malformations were in the musculoskeletal system, the central nervous system (CNS) gastrointestinal system, and genitourinary system; cardiovascular system malformations were rare. The incidences of stillbirths and perinatal mortality in the group with malformations were about 7 times those seen in normal infants. The highest mortality rate was found in the CNS malformations--anecephalus, 100 percent; hydrocephalus, 84 percent; and spina bifida in association with other CNS malformation, 77 percent. In similar studies done in Japan and Sweden, musculoskeletal malformations were most common; however, in an Irish study, CNS malformations were the most frequent. Cardiovascular system malformations are relatively more common in the Japanese, Swedish, and Irish studies than in the Indian study. (10 refs.) - H. West.

Indian Cancer Research Centre
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96 Conrad, W. Glenn, & Insel, Jonathan. Anticipating the response to amphetamine therapy in the treatment of hyperkinetic children. Pediatrics, 40(1):96-99, 1967.

Of 31 children treated for hyperkenesis, positive response to amphetamines occurred in 75 percent of those with organic factors, those with positive parent-child relationships, and those with no severe psychiatric problems in

the parents. Sixteen children were classified as organic (O), 9 as organic-emotional (OE), and 6 as primarily emotional (E). Five responses to amphetamine therapy were recognized: greatly improved (GI), improved (I), slightly improved (SI), unchanged (UC), and worse (W). A negative response occurred in 4 E children (67 percent) and only 1 showed an I response. Eight O children and 4 OE children had a GI response. No O children and 3 OE children had a W response. When either parent was regarded as socially incompetent or grossly deviant the child was less likely to respond to treatment. There were 2 interrelated variables affecting drug response in E children--diagnostic classification and parent-child relationship. Placebo effect could not be measured in this retrospective study but because of the extended positive responses that occurred it is not considered to invalidate the findings. The small sample and multiple variables do limit the conclusiveness of the study. (11 refs.) - R. Froelich.

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97 Linde, Leonard M., Rasof, Beatrice, & Dunn, Olive Jean. Mental development in congenital heart disease. Journal of Pediatrics, 71(2):198-203, 1967.

A group of 319 children with or without congenital heart disease revealed a lag in intellectual development among cyanotic children that was related, in part, to physical incapacity and that was found to partially correct itself when the children became older. The children included 49 boys and 49 girls with congenital cyanotic heart disease and physical handicaps (Group IV), 52 boys and 48 girls with non-cyanotic congenital heart disease (Group III), 81 normal siblings closest in age to the congenitally handicapped children (Group II), and 40 normal children (Group I). Testing included clinical evaluation, Cattel Infant Intelligence Scale and Gesell Developmental Schedules for children below 3 years of age, and the revised Stanford-Binet Scale for children over 2½ years of age. The mean IQ's were 96.1 for Group IV, 104.4 for Group III, 110.2 for Group II and 111.9 for Group I. Performance deficits in cyanotic children were most marked for gross motor function. Acyanotic children also were deficient in this area. Cyanotic children were behind in milestones, school attendance, physical activity, and social confidence. Laboratory testing showed expected hemoglobin and oxygen saturation values. Those older cyanotic children with normal environmental experiences often had normal or above average intelligence. (7 refs.) - R. Froelich.

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98 Hawke, William A. Definition of cerebral palsy. Canadian Medical Association Journal, 96(14):1072, 1967. (Letter)

Twenty-five clinicians representing pediatrics, neurology, orthopedic surgery, physical medicine, child psychiatry, and neurophysiology met in Berlin, Germany, September 1966 to arrive at a definition, terminology, and classification of cerebral palsy that would be mutually acceptable. Recommendations to the World Commission for Cerebral Palsy were: (1) adoption of the definition--"Cerebral palsy is a persistent but not unchanging disorder of posture and movement due to a dysfunction of the brain present before its growth and development are completed. Many other features may also be part of the picture"; (2) definition of terms in cerebral palsy by clinicians; (3) addition of a glossary of terms to all scientific papers until uniform terminology has evolved; (4) acceptance of the validity of different examination methods with patients described according to a standard multidimensional inventory. (No refs.) - J. Snodgrass.

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99 Tardieu, G. Necessité d'un diagnostic et d'un traitement precoces de l'infirmité motrice cérébrale. (The necessity of diagnosis and early treatment of cerebral motor disability.) Review d'Hygiene et de Médecine Sociale, 15(1):71-80, 1967.

Cerebral motor disability differs from cerebral palsy in that intelligence is preserved. Recognition of abnormal motor development and those motor disorders which will not be resolved assists in diagnosis. This allows psychological adjustment of the families and permits guidance in functional education, minimization of analytic disorders, and reorganization of motor development. Distinguishing from encephalopathies with poor mentality prevents inappropriate therapy and allows family psychotherapy as early as possible. (No refs.) - W. Asher.

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Disease or disorders of metabolism, growth, or nutrition

100 U. S. Children's Bureau. Rare Inborn Errors of Metabolism in Children with Mental Retardation. O'Brien, Donough. (Children's Bureau Publication Number 429) Washington, D. C., Superintendent of Documents, U. S. Government Printing Office, 1965, 100 p. $0.70.

Clinical, diagnostic, biochemical, and genetic aspects of the less common inborn errors of metabolism are presented with the intention of providing pediatricians and other professionals interested in MR with current information and diagnostic guidelines that are not yet available in textbooks. PKU, galactosemia, gargoylism, lipoidoses, hypoglycemic syndromes, and thyroxin disorders are not included. Disturbances of amino acid metabolism included are those involving sulfur-containing amino acids, the urea synthesis cycle, tryptophane metabolism, proline metabolism, histidine metabolism, tyrosine metabolism, and miscellaneous disorders. Other inborn errors include "T" substance in the urine, green acyl dehydrogenase deficiency, idiopathic hypercalcemia, lactic and pyruvic acidosis, hyperlipidemia, acid mucopolysaccharidiuria, and hyperuricemia. A list of diagnostic and screening tests that could be performed by any good clinical laboratory includes determination of plasma ammonia, paper chromatography of amino acids, determination of serum calcium, urine n-formiminoglutamic acid, serum histidine, serum lactic and pyruvic acid, blood pyruvate, plasma phospholipid, plasma cholesterol, plasma proline, tryptophan loading test, paper chromatography of urine phenolic acids, the nitroprusside cyanide test, and the ferric chloride test. (373 refs.) - R. Froelich.

CONTENTS: Disturbances of Amino Acid Metabolism; Other Rare Inborn Errors of Metabolism Associated with Mental Retardation; Diagnostic Technical Procedures.

101 McKean, Charles M., Schanberg, Saul M., & Giarman, Nicholas J. Aminoacidemias: Effects on maze performance and cerebral serotonin. Science, 157(3785):213-215, 1967.

The performance of weanling rats who were fed diets high in phenylalanine was poorer than controls on a multiple T, water-escape maze. This could be reversed by addition of 5 percent tryptophan to the high-phenylalanine diet. Rats given a 7 percent phenylalanine diet or a 7 percent leucine diet for 2 weeks made a mean number of 31.6 and 29.1 errors, respectively. The control group made a mean number of 16.8 errors which was significantly lower. Rats given a 5 percent tryptophan diet made a mean number of 11.8 errors. When phenylalanine and tryptophan were given together the rats made a mean number of 13.9 errors. After the final trial each rat was sacrificed and cerebral serotonin levels were determined. Serotonin levels were significantly lower in animals fed phenylalanine or leucine diets than in controls. Levels were significantly higher in animals fed tryptophan with or without phenylalanine. The association of serotonin depletion and poor maze performance supports the view that disturbed indole metabolism is the neurochemical basis for the behavioral deficit in PKU rats. (20 refs.) - R. Froelich.

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Eldridge, California 95431

102 Lonsdale, Derrick. Metabolic screening. Ohio State Medical Journal, 63(1):55-56, 1967.

Elevation of phenylalanine blood levels in neonates is a common finding while phenylketonuria is rare. Needless use of the artificial diet may do irreparable damage to the developing brain. The Guthrie-Susi screening test leads to positive findings reported to the responsible physician by the State of Ohio Laboratory but does not constitute a diagnosis. More accurate chemical tests are then conducted, such as chromatographic analysis of blood and urine. Nursing advisory service provided by the Ohio Department of Health assists families in maintaining proper dietary procedures once the diagnosis is confirmed. Between 5-10 mg/100 ml of blood is the optimal range of phenylalanine. (6 refs.) - J. Snodgrass.

Cleveland Clinic Foundation
Cleveland, Ohio

103 Jenke, Albert, Dexter, Robert, Shaw, Kenneth N. F., & Donnell, G. N. Chromatographic screening of urine for detection of inborn errors of metabolism. California Mental Health Research Digest, 5(2):106-108, 1967.

Chromographic studies were performed at Porterville State Hospital in California to determine the incidence of inborn errors of metabolism in MR patients. Urine analyses of

515 Ss screened from the hospital's 2,500 patients revealed 368 had normal excretion levels after a 48-hour high-protein diet. Sixty-one, many showing growth failure and/or cranial dyplasia, had generalized elevation of the 10 common amino acids. Eighty-six had elevated excretion of an individual amino acid, with PKU being the most common. Two cases had elevated lysine excretion; 9 had an increased concentration of histidine; 11 had high beta-aminoisobutyric acid; others had increased levels of glycine, taurine, alanine, and glutamine. Patients screened by sugar chromatography who possess an abnormal amino acid or sugar secretion pattern will be studied more fully. (No refs.) - C. A. Pepper.

Porterville State Hospital
Porterville, California 93258

104 Goodman, Stephen I., McIntyre, Clarence A., & O'Brien, Donough. Impaired intestinal transport of proline in a patient with familial iminoaciduria. Journal of Pediatrics, 71(2):246-247, 1967.

An 18-year-old severely MR girl with renal iminoaciduria and glycinuria was found to have impaired intestinal transport of proline. Brain damage was discovered following encephalitis at 4 months of age. Urine screening showed prolinuria, hydroxyprolinuria, and glycinuria. Amino acid urinary clearances were normal except for proline which was increased. Serum amino acids were normal. Glycine clearances in the father and 1 sibling were slightly elevated and the mother's was at the upper level of normal. Decreased intestinal absorption of proline was apparent when fecal amino acid determinations of the patient and 3 controls showed high proline values for the patient and none or trace for the controls. Following an oral proline load, serum proline elevated faster and to a greater degree in the controls. MR and convulsions may not be associated with iminoaciduria since other patients described with this disorder have been neurologically and physically intact. This patient is an example of a genetic disorder previously described in which homozygotes show iminoaciduria and glycinuria and heterozygotes show variable glycinuria and decreased tubular maxima for proline. (10 refs.) - R. Froelich.

Department of Pediatrics
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105 Michener, William M. Hyperuricemia and mental retardation. American Journal of Diseases of Children, 113(2):195-206, 1967.

Six patients, all boys, with hyperuricemia associated with MR, bilateral choreo-athetosis, and self-mutilation were treated with the uricosuric drug, probenecid. The birth and neonatal histories of all of the Ss were not unusual; they developed normally for several months. Then excessive irritability was noted and in the next 6 to 12 months spasticity and MR became evident. Progressive severity was seen in all 6 cases and serum uric acid was elevated. Probenecid was used successfully to bring the uric acid level within normal range. The drug seemed to improve the Ss' alertness, to decrease irritability, and to bring some relief of spasticity. In 1 case the diagnosis of hyperuricemia was made at 8 months and therapy was instituted. Early recognition and treatment of the disease revealed a definite decrease in spasticity and less irritability. (6 refs.) - H. Jones.

2020 East 93 Street
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106 Haggard, Mary Ellen, & Lockhart, Lillian H. Megaloblastic anemia and orotic aciduria. American Journal of Diseases of Children, 113(6):733-740, 1967.

A male infant with megaloblastic anemia, crystalluria (orotic acid), and MR responsive to oral uridine was found to have defective pyrimidine synthesis transmitted as an autosomal recessive trait. The infant was premature at birth and was first evaluated by a physician at 7 months of age. He was physically retarded and had alternating esotropia and a cardiac murmur. Intellectual testing at 58 weeks and again at nearly 4 years of age showed an IQ in the upper 60's. The megaloblastic anemia was severe and did not respond to pyridoxine, folic acid, folinic acid, vitamin B_{12}, alpha-tocopherol, or iron. The bone marrow was hypercellular and red blood cells had increased osmotic fragility. Orotic acid crystals were found in the urine. Gamma A and gamma D-globulins were absent on immunoelectrophoresis and the lactic dehydrogenase level in the serum was 620 units. Chromosome, and other enzyme studies were normal. The anemia responded to oral steroids. At 19 months of age he developed hematuria, was found to excrete large amounts of orotic acid (930 mg/24 hr), and had a hematologic relapse. Addition of uridine (1.5 gm daily) resulted in hematological improvement,

developmental acceleration (physical and mental), and decreased orotic excretion. Uridine is a nucleoside that bypasses the metabolic block. (12 refs.) - R. Froelich.

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107 Giorgi, P. L., Paci, A., & Ceccarelli, M. An extra chromosome in a case of Tay-Sachs disease with additional abnormalities. Helvetica Paediatrica Acta, 22(1):28-35, 1967.

A 3-year-old boy with Tay-Sachs disease was found to have an extra small acrocentric chromosome similar to a G-group member. The child was discovered to be inactive and MR shortly after birth. Other abnormalities were complete cleft palate, abnormal ears, cryptorchism, and a rudimentary scrotum. He had bilateral optic atrophy with a macular red cherry spot. The chromosome number was 47 and both blood and skin cultures showed similar karyotypes. The mother's karyotype was normal. Dermatoglyphic studies of the propositus were normal. At the age of 3 he is progressively retarded and unable to feed himself. An EEG showed disorganization and cortical and subcortical irritation. The nuclear chromatin was negative. There was no evidence clinically of Down's syndrome, but rather of a partial trisomy D as in Patau's syndrome. The association of the chromosomal abnormality with Tay-Sachs disease is considered coincidental. (20 refs.) - R. Froelich.

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108 Gellis, Sydney S., & Feingold, Murray. Wilson's disease. American Journal of Diseases of Children, 113(1):177-178, 1967.

This picture-of-the-month series shows Kayser-Fleischer rings, classical facies, and the wrist in constant flexion in hepato-lenticular degeneration. Symptoms may include hepatic and/or neurological manifestations, the former more commonly in childhood and the latter more common, initially, in adulthood. Etiologically, the copper binding alpha$_2$-globulin, ceruloplasmin, is decreased probably due to deficient synthesis, or synthesis of an abnormal type of ceruloplasmin. Copper metabolism is then disrupted, resulting in an accumulation of copper in the body. Wilson's disease is inherited as an autosomal recessive with boys and girls equally affected. Laboratory findings include: (1) decreased levels of serum ceruloplasmin and serum copper; (2) increased levels of urinary copper; (3) aminoaciduria; (4) abnormal liver function tests; and (5) thrombocytopenia. Penicillamine and dimercaprol are the drugs of choice with dietary treatment avoiding food high in copper content. (3 refs.) - J. Snodgrass.

No address

109 Walshe, J. M. The physiology of copper in man and its relation to Wilson's disease. Brain, 90(1):149-176, 1967.

Copper is an essential trace element in all animal species. It functions in the cytochrome system and in hemoglobin and myelin synthesis. Ingested copper is concentrated in the liver, then released as ceruloplasmin. Inability to synthesize ceruloplasmin results in abnormally high hepatic concentrations in Wilson's disease producing hepatocellular damage. The damaged liver becomes unable to take up copper normally, resulting in deposition in many body tissues (brain, cornea, and kidneys) producing the clinical picture of hepato-lenticular degeneration. Long term negative copper balance, as produced by penicillamine therapy, will improve the entire clinical and pathologic picture unless irreversible damage and scarring have occurred. The biochemical defect (ceruloplasmin deficiency) remains, making maintenance therapy necessary throughout life. (98 refs.) - W. A. Hammill.

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110 Blattner, Russell J. Hemolytic anemia associated with Wilson's disease. Journal of Pediatrics, 71(2):284-287, 1967.

Three patients with hemolytic anemia and other manifestations of Wilson's disease possibly developed their hemolytic episodes during periods of copper flux. The history, symptomatology, pathology, genetics, and treatment of Wilson's disease are reviewed. The 3 patients described were a 12-year-old boy, a 9-year-old boy, and a 21-year-old woman. All 3 had hepatolenticular degeneration, corneal rings, high urinary copper levels, and 2 had low serum ceruloplasmin. During the acute hemolytic episodes the excretion of copper was greatly increased when compared to 3 controls who had hemolytic crises but without Wilson's disease. The 2 boys

with Wilson's disease died and the woman responded to penicillamine treatment and survived. The 12-year-old boy had lassitude 4 months prior to diagnosis of hemolytic anemia. The woman developed episodes of abnormal behavior and slurred speech which improved with treatment. She still has recurrent episodes of hemolysis. The mechanism causing hemolysis may be analogous to that of enzootic jaundice in sheep which occurs when sheep graze in copper-rich pastures. (4 refs.) - R. Froelich

No address

111 Sano, Isamu, & Arima, Masataka. Genetical and epidemiological studies of Wilson's disease in Japan. Psychiatria et Neurologia Japonica, 69(6):555-562, 1967.

A genetical and epidemiological analysis of patients with Wilson's disease in Japan revealed the following conclusions. (1) The patients with Wilson's disease were evenly distributed in almost all areas in Japan. (2) The hepatic symptoms were dominant as the initial symptoms of the disease in patients under ten years of age, while neurological symptoms were predominant as the initial symptoms in patients over ten years of age ($p<0.01$). (3) The disease was classified clinically into the hepatic, hepato-cerebral, and cerebral types. In Kanto and Tokyo areas patients of hepatic and hepato-cerebral types were commonly observed, while in Tohoku and Hokkaido the cerebral type was predominant. (4) Age at death of the hepatic type patients ranged from 5 to 9 years. Age at death of the hepato-cerebral type patients ranged from 10 to 14 years, and over 15 years in the cerebral type patients ($p<0.01$). (5) The types and the age of onset of Wilson's disease among the siblings of a family revealed statistically significant similarities. (6) The average rate of consanguineous marriage in parents of Ss with Wilson's disease in Japan was 50 percent. The rate was high among the families from Kanto district and low in those from Tokyo. Among the families from small cities with a population of less than 100,000, the highest rate averaged 68 percent. Among the families from large cities with a population of more than 100,000, the lowest rate averaged 37 percent. In rural areas the rate was 55 percent ($p<0.05$). These differences might be the result of the differences in the rate of consanguineous marriage and of the gene frequency of the disease among the general inhabitants of each area. (24 refs.) - (Source: PNJ, edited)

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112 Woolf, L. I., Cranston, W. I., & Goodwin, B. L. Genetics of phenylketonuria. Nature, 213(5079):882-883, 1967.

Thirty-one heterozygotes and 34 normal adults were given phenylalanine as a single dose by intravenous injection of the buffered sodium salt in sterile aqueous solution after an overnight fast. In all but 4 of the 65 Ss the rate of return of plasma phenylalanine concentration to the fasting level was proportional to the difference between them. Urinary loss of phenylalanine and of its metabolites phenylpyruvic acid and o-hydroxyphenylacetic acid was found to be negligible. To a close approximation, all the phenylalanine administered was converted to tyrosine by the action of phenylalanine hydroxylase. The rate and extent of the rise in blood tyrosine concentration after phenylalanine injection were significantly different in normals and heterozygotes. The discriminatory power of this function is 4.8 for females and 2.7 for males. (14 refs.) - (Source: Journal of the American Medical Association, 200(4):217, 1967)

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Oxford, England

113 Woolf, L. I., Cranston, W. I., & Goodwin, B. L. Genetics of phenylketonuria: II. Third allele at the phenylalanine hydroxylase locus in man. Nature, 213 (5079):883-885, 1967.

There were no detectable qualitative difference between the metabolism of phenylalanine in heterozygotes and normals. The rate-limiting step in the disappearance of phenylalanine from the blood is the conversion of phenylalanine to tyrosine in the liver. Phenylalanine hydroxylase behaves like other enzyme systems in obeying Michaelis-Menten kinetics. In most of the cases studied, the reaction velocity was even; however, in 3 cases it was lower. Possibly a qualitatively atypical enzyme was acting in those cases. The single active gene at the relevant locus was, in each case, allelic to both the typical gene and the gene for phenylketonuria. The lower K_m (constant) value of the atypical enzyme indicated that phenylalanine has a higher affinity for the atypical than the typical enzyme; the relatively low frequency of the "atypical" allele, at most 4 out of 31, suggests that possession of an enzyme with increased affinity for phenylalanine does not lead to increased survival fitness. (No refs.) - (Source: Journal of the American Medical Association, 200(2):217, 1967)

Radcliffe Infirmary
Oxford, England

114 Brown, Eleanor S., & *Waisman, Harry A. Intelligence of the unidentified phenylketonuric child. Pediatrics, 40(2): 247-249, 1967.

Of 56 siblings born in 19 families before identification of a phenylketonuric (PKU) child, 5 were found to have PKU and 51 were non-PKU. Data from the 19 families were collected over a 10-year period. Serum phenylalanine levels were determined on all children in every family studied. All 5 PKU children discovered among the siblings were clinically symptomatic with MR, failure to thrive, and feeding problems. Seven non-PKU children were also MR. The mean IQ of the normal non-PKU children was 110.1 compared to 46.25 for the PKU children. The ages of the PKU children discovered after identification of the PKU proband ranged from 1 to 12 years. This study further supports the conviction that untreated PKU results in severe MR and that the proportion of PKU children without MR is low. If MR was incidental in PKU the expected number of siblings affected by PKU would have been 14. (3 refs.) - R. Froelich.

*1300 University Avenue
Madison, Wisconsin

115 Wood, Alfred C., Jr., Friedman, C. Jack, & Steisel, Ira M. Psychosocial factors in phenylketonuria. American Journal of Orthopsychiatry, 37(4):671-679, 1967.

Twelve male and 10 female phenylketonuric (PKU) children from 19 families were studied by questionnaire, interview, and observation in order to elicit some psychosocial factors important in the prediction of outcome, treatment, and understanding of their disorder. The questionnaire showed that parents omitted, added, and distorted important facts about PKU. Denial was the most frequent emotional defense used by parents with anxiety and intellectualization also occurring. Food-play situations with parents and child were observed revealing a number of interesting variations in parental response related to their personality, marital adjustment, and other factors. Photographs of these situations revealed to the parents how they blocked their child from contacting food. Difficulties that the parents felt were significant were an inability to really believe that protein could be harmful, conflicts where the family engaged in eating, the child visiting friends, food stealing or bartering, and parental guilt. All families reacted to the crisis of PKU with great intensity at one time or another. The PKU children were being severely curtailed from free play and exploration and the chance to make meaningful decisions and discriminations which produced confusion and fear. What effect this has on intellectual development is not yet clear. (4 refs.) - R. Froelich.

St. Christopher's Hospital
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Philadelphia, Pennsylvania

116 Hudson, F. P. Hyperphenylalaninemia without phenylketonuria. Developmental Medicine and Child Neurology, 9(4):496-497, 1967.

Hyperphenylalaninemia can occur without phenylketonuria (PKU) and does not require rigid dietary treatment. Transient elevations of serum phenylalanine (PA), usually less than 10 mg/100 ml, occur in 0.2 percent of newborns. In PKU Ss the elevation is greater than 20 mg/100 ml. Ss with serum PA levels between 15 and 25 mg/100 ml are diagnostic problems, and many who maintain low serum PA and tyrosine levels with no abnormal urinary metabolites, will require no treatment. Dietary treatment (PA restriction) should be instituted in any S with serum PA greater than 20 mg/100 ml and discontinued briefly at 3-month intervals until a rise of 20 mg/100 ml occurs. This regimen will prevent brain damage and allow separation of those who no longer require dietary restriction. (5 refs.) - W. A. Hammill.

Alder Hey Children's Hospital
West Derby
Liverpool 12, England

117 Hsia, David Yi-Yung, & O'Flynn, Margaret E. Hyperphenylalanemia. Metabolism, 26(2):99-101, 1967.

Widespread screening for phenylketonuria (PKU) among newborns has led to recognition of syndromes other than "classical" PKU defined as a rise of serum phenylalanine to 30 mg percent or higher by the end of the first week of life. Mean serum phenylalanine values in heterozygotes for PKU in 87 observations made in 34 phenylketonuric siblings were 2.35 ± 0.57 mg percent compared to a group of 4,000 normal newborns with 2.08 ± 0.51 mg percent. Another common cause of hyperphenylalanemia is hypertyrosinemia usually caused by a functional immaturity of liver enzymes tyrosine transaminase or p-hydroxyphenylpyruvate oxidase. One additional hyperphenylalanemia of unknown etiology may

be caused by phenylalanine transaminase, hydroxylan, reductase, or related enzymes. A new syndrome is characterized by a slower rise of serum phenylalanine to levels less than 30 mg percent during the first few weeks of life. Such infants have normal serum tyrosine levels and can tolerate a phenylalanine intake of 90-100 mg per 24 hours. This syndrome may represent one-third to one-half of all infants now called phenylketonuric. It is not clear whether infants with this syndrome require treatment with low phenylalanine diets or whether some of the infants picked up by screening are being treated unnecessarily. (7 refs.) - W. Asher.

Northwestern University Medical School
Chicago, Illinois

118 Justice, Parvin, O'Flynn, Margaret E., & *Hsia, David Yi-Yung. Phenylalanine-hydroxylase activity in hyperphenylalaninaemia. Lancet, 1(7496):928-929, 1967.

A comparison of phenylalanine-hydroxylase activity in 2 cases of "classic" phenylketonuria (PKU) and 2 cases of hyperphenylalaninemia reveals that the latter disorder only partially affects the activity of phenylanine-hydroxylase. Enzyme activity was determined on liver biopsy specimens according to the method described by LaDu and Zannoni (1967). The 2 patients with PKU were ages 18 years and 18 months. The latter had a mild form of PKU and both were found to have no phenylalanine-hydroxylase activity with or without added cofactor. This finding is consistent with previous reports that PKU is the result of enzyme deficiency and not of the cofactor. The patients with hyperphenylalaninemia had decreased phenylalanine-hydroxylase activity (one-half normal activity for 1 patient and between one-tenth and one-fifth activity for the other.) Addition of D.M.T. H.P. (2-amino-4-hydroxy-6,7-dimethyltetrahydropteridine) did not restore full enzyme activity which rules out the possibility of cofactor deficiency in this disorder. Hyperphenylalaninemia probably represents a genetic variant of PKU rather than a heterozygous state. (14 refs.) - R. Froelich.

*Children's Memorial Hospital
Chicago, Illinois 60614

119 Stevenson, Roger E., & *Huntley, Carolyn C. Congenital malformations in offspring of phenylketonuric mothers. Pediatrics, 40(1):33-45, 1967.

Two sisters with PKU on non-restricted diets have had 26 pregnancies, 16 ending in abortion, 6 infants dying in infancy, and 4 surviving infants. All live births had congenital anomalies without PKU which points out the problems of reproduction in PKU mothers. A family pedigree shows a brother and maternal first cousin of the sisters to have PKU. The live births of these 2 women all had various combinations of prematurity, cardiac defects, MR, physical retardation, microcephaly, dislocated hips, and strabismus. Mother A had 11 pregnancies, 6 of which ended in spontaneous abortions during the first trimester. Four of 5 live births ended in early death. The 1 survivor was MR. Mother B had a total of 15 pregnancies, 10 of which were spontaneous abortions. Three infants survived, all of which had MR. The IQ was measured in 2 infants (56 and 38). Three children available for testing had normal phenylalanine tolerance tests. The above findings are consistent with previous reports of PKU mother offspring. One such child has been reported as normal. It seems likely that the high blood phenylalanine is the etiological factor causing the fetal anomalies but this has not been proven. It is very difficult to keep phenylalanine levels low in adults. (26 refs.) - R. Froelich.

*Department of Pediatrics
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Winston-Salem, North Carolina 27103

120 Colombo, J. P., Vassella, F., Humbel, R., & Rossi, E. Phenylketonuria, a family study. Borderline intelligence in two siblings with mentally retarded children. Helvetica Paediatrica Acta, 22(3):243-251, 1967.

Three severely retarded PKU siblings (IQ less than 20) had the same degree of biochemical defect as their mother whose intelligence was borderline normal. Blood and urine phenylalanine levels, phenylalanine loading tests, and plasma phenylalanine-tyrosine ratios were used to determine the severity of the enzyme defect. All four Ss and the mother's brother had results typical of homozygous PKU. The father was biochemically heterozygous for the PKU gene. The elevated blood phenylalanine alone in maternal PKU will not cause such severe brain damage in utero. Another factor, as yet unknown, must be involved to explain the poor correlation between the severity of the biochemical defect and the degree of MR. The question is raised as to how many Ss treated with dietary phenylalanine restriction might have developed normal intelligence without such therapy. (23 refs.) - W. A. Hammill.

Children's Hospital
Berne, Switzerland

121 Luszki, Walter A. Intellectual characteristics of phenylketonuric children. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 7 p. Typed.

No significant difference in intellectual functioning was found between an experimental group of 15 phenylketonuric children and a control group of 15 non-phenylketonuric children. Ss were matched for sex (20 males, 10 females), age (mean CA, 44 months), and IQ (mean 58). Either the Stanford-Binet Intelligence Scale Form L-M or the Cattell Infant Intelligence Scale was administered to each S. An analysis of both Verbal and Performance items was made in order to assess differences in intellectual performance. Both groups exhibited the same response patterns. Additional observations of handedness and speech development were made and no significant differences between groups were found. These findings suggest that in terms of educational needs, phenylketonuric children do not differ from non-phenylketonuric children with the same IQs. (10 refs.) - J. K. Wyatt.

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122 Dobson, James C., Koch, Richard, Meyers, C. E., Spector, Ronald, & Williamson, Malcolm. The relationship between cognitive development and dietary treatment in phenylketonuric children. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 6 p. Mimeographed.

A retrospective study of 114 PKU children demonstrated the importance of early dietary treatment to prevent intellectual damage. Initial evaluation of the data when the children were divided into 3 age groups (1-, 2-, and 3-year-olds) did not show more effective results from initiation of treatment in the first year than in the second year. The mean IQs of the 1-, 2-, and 3-year-olds at time of initiation of treatment were 75.6, 72.8 and 59.3, respectively. When the patients were divided into 8 groups according to the age of dietary inception, a consistent drop in IQ occurred as treatment was delayed. The mean IQ of children receiving dietary treatment between birth and 1 month was 89.3. Although the diet does not totally prevent brain damage even when started at birth, the difference between non-treated or late treated children is significant. There were no significant differences between boys and girls. The parents' and non-PKU siblings' mean IQ was significantly higher than that of the PKU children. Initial serum phenylalanine levels were of no prognostic value. A mandatory screening program is strongly recommended. (No refs.) - R. Froelich.

No address

123 Birch, Herbert G., & Tizard, Jack. The dietary treatment of phenylketonuria: Not proven? Developmental Medicine and Child Neurology, 9(1):9-12, 1967.

In a study by Berman, Waisman, and Graham of 22 children with phenylketonuria (PKU), there was often no correlation between the age at which dietary treatment was begun and IQ; the S with the highest IQ (98) at the beginning of treatment started treatment at 95 weeks. The low-phenylalanine diet had little, if any, effect on raising the IQ and the conclusion that the special diet was responsible for the generally higher IQ levels in the children for whom treatment was begun early is not warranted. The Ss for whom treatment was begun late were originally tested for PKU because they were MR so this group does not represent a random sampling of children with PKU. Therefore, the low-phenylalanine treatment has not been conclusively proven to be effective. The biochemical defect of PKU may be more common than is presently suspected, but the physical signs of the disease may be minimal. More sensitive tests are necessary to detect these cases. (7 refs.) - H. West.

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Eastchester Road and
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Bronx, New York 10461

124 O'Flynn, Margaret E. Diet therapy in phenylketonuria. How long should it continue? American Journal of Nursing, 67(8):1658-1660, 1967.

Dietary therapy may be discontinued after 5 years of age in PKU Ss without loss of intelligence. IQ measurement revealed no deterioration in 4 Ss 12 to 21 months after changing to a regular diet. In no case did behavioral problems become manifest after the diet change. Most Ss were better behaved, perhaps because of the lessened parental restriction. Low phenylalanine diet is expensive and becomes progressively more difficult to administer as children get older, more ambulatory, and more independent. Recurrence of eczema was common, but less severe than that seen in untreated PKU Ss. Dietary restriction should be reinstituted in pregnant female PKU Ss to

avoid brain damage in infants of affected mothers. The mature brain is more resistant to the toxic effects of high blood phenylalanine levels, thus older children may not need severe dietary phenylalanine restriction. (3 refs.) - W. A. Hammill.

Children's Memorial Hospital
Chicago, Illinois

125 Loo, Y. Hoong, & Ritman, P. Phenylketonuria and vitamin B_6 function. Nature, 213(5079):914-916, 1967.

Experiments were conducted to determine whether the retarding effect of phenylalanine on learning in the rat is influenced by pyridoxine in the diet, whether a deficiency of B_6 impairs learning, and whether phenylalanine affects recovery from B_6 deficiency symptoms. Diets containing large amounts of phenylalanine and pyridoxine inhibit learning in rats. Deficient mental performance is caused not by lack of pyridoxine but rather by interference of pyridoxine metabolism. Retarded learning, poor growth, acrodynia, and loss of fur were observed in animals fed deoxypyridoxine. Addition of pyridoxine to the diet brought about full recovery in all animals. When pyridoxine, however, was fed with phenylalanine these B_6 deficiency symptoms persisted in 95 percent of the animals and became more severe in a few. Apparently the utilization of pyridoxine for recovery was prevented. Experimental evidence suggests that in phenylketonuria vitamin B_6 function is impaired by an inhibitory substance formed from dietary phenylalanine and pyridoxine. Among the known products of phenylalanine metabolism, pyridoxylidene phenylethylamine may interfere with vitamin B_6 function and thus cause the mental derangement. (14 refs.) - (Source: Journal of the American Medical Association, 200(4):217, 1967)

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126 Fisch, Robert O., Jenness, Robert, Doeden, Doris, & Anderson, John A. The effect of excess L-phenylalanine on mothers and on their breast-fed infants. Journal of Pediatrics, 71(2):176-180, 1967.

An oral load of L-phenylalanine given to 4 lactating mothers, 2 of which were heterozygous for phenylketonuria (PKU), resulted in higher concentrations of phenylalanine and its metabolites in the heterozygous mothers' milk than in the 2 who were nonheterozygous. The heterozygous mothers had a total of 3 PKU children. The normal mothers were primiparas. Each mother was breast feeding her infant. Serum phenylalanine concentrations of the heterozygous mothers were higher than for the other 2 mothers. All 4 mothers had increased excretion products of phenylalanine including p-hydroxyphenolic acids, indole-3-acetic acid and, in 3 mothers, o-hydroxyphenylacetic acid. The increased derivatives of phenylalanine and tyrosine in the mothers' milk increased only following loading. One normal mother had a lesser increase of these compounds in her milk. The serum phenylalanine and tyrosine concentrations in the infants remained within normal limits for 24 hours after the mothers' oral load. There were no consistent changes of metabolites in the infants' urine over a 24-hour period but there were increases immediately following loading. Since this is evidence that the infants did receive phenylalanine from breast feeding, the question of whether untreated homozygous mothers should nurse their infants deserves consideration. (6 refs.) - R. Froelich.

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Minneapolis, Minnesota 55455

127 Moser, Hugo W., Efron, Mary L., Brown, Henry, Diamond, Richard, & Neumann, Charlotte G. Argininosuccinic aciduria. Report of two new cases and demonstration of intermittent elevation of blood ammonia. American Journal of Medicine, 42(January):9-26, 1967.

Two MR brothers were found to have arginosuccinic aciduria. The older brother, age 17 years, excretes up to 9 gm of arginosuccinic acid per day. The younger brother, age 5 years, excretes approximately 2 gm/day. Both patients have had brief generalized seizures, and the older brother has been ataxic intermittently. No abnormality of hair has been found. The parents are first cousins once removed. The concentration of arginosuccinic acid in spinal fluid in both patients was between 8 and 10 mg/100 ml and that in the blood, 2.5 mg/100 ml. Intermittent elevation of blood ammonia up to 400 micrograms/100 ml has been demonstrated in the older patient. Plasma citrulline levels are elevated in both patients and are higher than those in their spinal fluid. The red blood cells have no demonstrable arginosuccinase activity. Arginosuccinic acid is not demonstrable in the urine, but arginosuccinase activity in the

red blood cells is less than normal. (57 refs.) - (Source: Journal of the American Medical Association, 199(11):234-235, 1967.)

Harvard Medical School
Boston, Massachusetts

128 Gaull, Gerald E. The pathogenesis of homocystinuria. In: Treatment of amino acid disorders (symposium). American Journal of Diseases of Children, 113(1):103-107; discussion, 107-108, 1967.

Homocystinuria is related to a deficiency of cystathionine synthase, thereby causing cystine to become an essential amino acid; this inborn metabolic error might be included in the "abnormal turnover" group, along with phenylketonuria. The "toxic" group has an accumulation of a nonessential substance, such as galactose in galactosemia. Salutary diet seems to control the disease and should be started within the first year. A patient treated since infancy on a diet high in methionine and low in cystine did not have the proper blood concentration of methionine. He was switched to a low-methionine formula with a large supplement of cystine, which caused a drop in plasma methionine levels from 4 mg to 1.8 mg/100 cc. The cystine level remained constant. The patient developed normally. In the discussion, a 7-year-old male patient, who suffered from a severe behavioral disorder, is presented. He was given 200 mg methionine per day and placed on a low protein diet; weight and height improved, normal plasma levels were seen and the ability to identify and react were seen to improve. Platelet stickiness did not seem to be a reliable test. (10 refs.) - H. Jones.

Division of Pediatric Neurology
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New York, New York 10032

129 Turner, Gillian, Dey, Judith, & Turner, B. Homocystinuria: A report of two Australian families. Australian Paediatric Journal, 3(1):48-53, 1967.

Two Australian families with 5 living children having homocystinuria are described from a clinical, biochemical, and pathological standpoint. In one family, the parents were first cousins and had 3 affected boys (ages 4, 6, and 11 years) out of 5 living children. A girl died at 2 years of age, apparently affected as well. The second family had 2 living children, both affected and an apparently affected 5-year-old girl who died. The parents were not related and the children were ages 7 years and 21 months. The clinical features consisted of arachnodactyly, genu vulgum, pectus excavatum, colored cheeks, mottled legs, ectopia lentis, and MR. The younger children were least affected and the older children were severely affected. The MR ranged from borderline to severe with progressive retardation. Mental development and milestones appear normal for the first 6 months of life. The diagnosis can be inferred from clinical examination but can be proven by the determination of homocystine in the urine. The cyanide nitroprusside reaction can serve as a simple screening test. The biochemical defect has been found to be an absence of cystathionine synthetase in the liver and brain. It is an autosomal recessive disorder that as yet has no known effective treatment. (13 refs.) - R. Froelich.

Department of Public Health
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Australia

130 Komrower, G. M. Dietary treatment of homocystinuria. In: Treatment of amino acid disorders (symposium). American Journal of Diseases of Children, 113(1):98-100, 1967.

A 2-year, 4-month-old girl with homocystinuria has been successfully maintained on a dietary regimen since she was 9 days old. The diet is based on gelatin which is low in methionine and high in cystine with other amino acids, vitamins, and minerals added. The girl has developed well, physically and mentally; she displays no subluxation of the lens nor obvious bone lesions. The older the patient becomes the more difficult it will be to control her diet. In other patients, the onset of symptoms varied, from before 1 year until 3.5 years of age. Also a dietary regimen was instituted along with an anti-convulsant for a 3-year-old girl who was backward and had seizures. Her progress is not definite, although she is more talkative and self-confident and her IQ has gone from 73 to 83. The diet should be maintained indefinitely due to the potential effects on the blood vessels and platelets, bone, and the lens. (3 refs.) - H. Jones.

The Mental Retardation Unit
Royal Manchester Children's Hospital
Pendlebury, England

131 Hooft, C., Carton, D., & Samyn, W. Pyridoxine treatment in homocystinuria. Lancet, 7504(1):1384, 1967. (Letter)

Two homocystinuric patients presenting MR,

bilateral dislocation of the lens, peculiar facies, abnormal gait, and skeletal abnormalities were treated with pyridoxine. A 10-year-old boy responded quickly and returned to nearly normal plasma-aminoacid levels and a 4-year-old girl, more severely affected, gave initial good results but these were reversed by chickenpox 32 days after treatment began. (No refs.) - J. Snodgrass.

Department of Pediatrics
University of Gent
Gent, Belgium

132 Morris, M. D., & Fisher, D. A. Trypsinogen deficiency disease. American Journal of Diseases of Children, 114(2):203-208, 1967.

A 6-month-old female infant with failure to thrive, developmental retardation, imperforate anus, hypoproteinemic edema, iron deficiency, hypocalcemia, fat malabsorption, hypotonicity, and a peculiar facies with a beak-like small nose also was found to have trypsinogen deficiency. Pregnancy and delivery were uncomplicated. The imperforate anus was surgically corrected. Failure to thrive was noted upon hospital admission at 6 months of age. Stools were yellow and formed without signs of increased fat. Additional findings included a pale appearance, sparse hair, anemia, and a normal karyotype. No proteolytic activity was found on 4 stool trypsin screening tests. A protein hydrolyzate formula (Nutramigen) was given for 2 months with clinical improvement. No trypsin, chymotrypsin, or carboxypeptidase activity was found in duodenal juice. She continued on the Nutramigen diet and at 20 months was in the twentieth percentile for most parameters. At this time proteolytic enzyme studies showed some chymotrypsin and carboxypeptidase activity after autocatylytic trypsin activation but no trypsin activity was detected. Normal pancreatic proteolytic enzyme activity was found in the parents. The clinical picture could be the result of the prolonged calorie malnutrition or of some associated disorder of growth and development. (10 refs.) - R. Froelich.

Department of Pediatrics
University of Arkansas
School of Medicine
Little Rock, Arkansas 72201

133 Steim, H., & Zollinger, H. U. Tödliche Schrumpfniere bei Glykogenspeicherkrankheit Typ von Gierke. (Fatally contracted kidney in glycogen storage disease type von Gierke.) Klinische Wochenschrift, 45(6): 295-299, 1967.

A uremic case of glycogen storage disease in a 16-year-old girl with contracted kidneys and retarded growth is described. The girl showed an increased tendency to hemorrhage, which was explained by a functional lesion of the platelets. The kidney contraction was of the tubular-interstitial type with heavy thickening of the tubular basement membranes. This lesion seems to be the consequence of an increased permeability of the tubular epithelium damaged by extremely severe glycogen storage. Similar cases of kidney damage in glycogen storage disease could not be found in the literature. (12 refs.) - (Source: Journal of the American Medical Association, 200(2):232, 1967)

Pathologisches Institut
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134 Hsia, David Yi-Yung. Clinical variants of galactosemia. Metabolism, 26(5):419-437, 1967.

Alternate metabolic pathways, enzyme variants (Duarte), and heterozygous states make screening for galactosemia (galactose-1-phosphate uridyl transferase deficiency) difficult. The clinical picture of classical galactosemia includes: growth failure, MR, cirrhosis and liver failure, edema, galactosuria, and aminoaciduria. Elevated enzyme levels have been found in Down's syndrome leukocytes, probably due to their short survival time. Methylene blue decolorization by nicotinamide adenine dinucleotide phosphate will detect heterozygotes, homozygotes, Duarte and Negro variants, but may give false positive results in glucose-6-phosphate dehydrogenase deficient Ss. Development of a practical and accurate screening test will allow early institution of dietary therapy and avoid the development of the clinical manifestations of galactosemia. (64 refs.) - W. A. Hammill.

Northwestern Medical School
Chicago, Illinois

135 Kogut, Maurice D., Donnell, George N., & Shaw, Kenneth N. F. Studies of lactose absorption in patients with galactosemia. Journal of Pediatrics, 71(1):75-81, 1967.

Only 1 of 10 patients with galactosemia who had been treated with a lactose-free diet since infancy demonstrated an inability to

hydrolyze lactose and absorb the monosaccharide components when given an oral lactose load. This indicates that intestinal lactase is not dependent on previous lactose intake. The Ss' ages ranged from 7 to 17 years and all satisfied clinical and laboratory (absent erythrocyte galactose-1-phosphate uridyl transferase activity) criteria for the diagnosis of galactosemia. Six children between the ages of 8 to 18 years served as controls. Total reducing substances in the blood increased after the lactose load in the controls and in 9 galactosemic Ss. Significant increases in erythrocyte galactose-1-phosphate and galactose excretion occurred in these 9 Ss. The 6 normal controls had a significant rise in blood glucose and total reducing substances with a normal lactose, galactose, and glucose urinary excretion. No defect in monosaccharide absorption was found in the normal Ss. The 1 galactosemic patient who did not have a rise in blood glucose, total reducing substances, erythrocyte galactose-1-phosphate, or galactose excretion had an isolated lactase defect demonstrated by a jejunal biopsy and sugar tolerance tests. (32 refs.) - R. Froelich.

Department of Pediatrics
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4614 Sunset Boulevard
Los Angeles, California 90027

136 Haworth, J. C., & Barchuk, N. H. A simple chromatographic screening test for the detection of galactosemia in newborn infants. Pediatrics, 39(4):608-610, 1967.

The detection of galactosemia in the blood of newborn infants is relatively simple and reliable by a paper chromatographic quantitative assessment test. Capillary blood is collected on filter paper and the test is run concurrently with PKU screening tests. Blood glucose and fructose levels also are indicated by the test. After the blood is collected it is chemically treated according to a described procedure. This test is currently being used as a screening procedure. One true positive test has been observed and, thus far, no false positive results have occurred. Other advantages of the test include simple equipment, little training, easy evaluation, and economy (4 to 6 cents per test). There is essentially no time requirement for processing the filter paper samples since glucose or galactose levels do not change significantly over a 3-month period. This test remains a screening test, however, and should not be used as a specific test for making the diagnosis of galactosemia. (7 refs.) - R. Froelich.

Children's Hospital of Winnipeg
Winnipeg 3, Canada

137 Mereu, Tullio R., Kassoff, Aaron, & Goodman, A. David. Infantile hypoglycemia--Continued. New England Journal of Medicine, 276(20):1156-1157, 1967. (Letter)

Diazoxide is re-asserted to be superior to ephedrine and long-acting zinc glucagon as the agent of choice in the treatment of chronic hypoglycemia in children and adults. There are no published data on the effect of ephedrine on blood glucose in hypoglycemic states. Two hypoglycemic children treated with zinc glucagon had to be fed frequently and occasional hypoglycemic symptoms occurred 2 to 4 hours after eating. Side effects and other shortcomings are less with diazeoxide therapy. (4 refs.) - J. Snodgrass.

No address

138 Pildes, Rosita S., Forbes, Audrey E., & *Cornblath, Marvin. Studies of carbohydrate metabolism in the newborn infant. IX. Blood glucose levels and hypoglycemia in twins. Pediatrics, 40(1):69-77, 1967.

Carbohydrate metabolism and clinical studies on 100 pairs of twins showed a relationship between birth weight and blood sugar levels and no relationship between first or second born, or sex and blood sugar levels. The 200 infants ranged in weight from 735 to 3,459 gm with a mean gestational age of 36 weeks. There were 24 female pairs, 27 male pairs and 39 mixed pairs. A total of 16 infants died, 8 male and 8 female. Both infants of 4 pairs died. Eight infants who died were below 1,000 gm at birth. Blood glucose was determined during the first 4 days of life. Mean glucose values on the first day were 44 mg/100 ml. Values were significantly higher in twin infants who weighed over 2,500 gm. Low glucose values correlated with a birth weight under 2,500 gm or a gestation less than 37 weeks. A weight discordance of over 25 percent occurred in 13 pairs. Mean glucose differed significantly in these 13 with lower values in the smaller infant, 8 of whom had symptomatic hypoglycemia and weighed less than 2.0 kg. The relationship between hypoglycemia and MR could not be determined from

this data but the possibility makes hypoglycemia a disorder that should be vigorously searched for and treated. (35 refs.) - R. Froelich.

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139 Gitzelmann, R., Poley, J. R., & Prader, A. Partial galactose-1-phosphate uridyltransferase deficiency due to a variant enzyme. Helvetica Paediatrica Acta, 22(3): 252-257, 1967.

Two Ss, heterozygous for both classical galactosemia and the Duarte variant of galactosemia, were both totally asymptomatic. The infant S (age 5 months) had erythrocyte galactose-1-phosphate uridyltransferase levels of 25 percent of normal (maternal level 75 percent, paternal level 50 percent) as determined by the UDPG consumption test. The adult S (age 38 years) had erythrocyte enzyme levels also of 25 percent of normal (maternal level 50 percent, paternal level 75 percent). She had 1 normal and 2 galactosemic (homozygous) children. The Duarte variant enzyme has reduced activity and greater electrophoretic mobility than the normal enzyme. Both Ss are assumed to have received the galactosemic gene (Gt+) from one parent and the Duarte variant (Gt^D) from the other. Erythrocyte levels of 25 percent of normal are compatible with normal development. (22 refs.) - W. A. Hammill.

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140 Steinberg, Daniel, Herndon, James H., Jr., Uhlendorf, B. William, Mize, Charles E., Avigan, Joel, & Milne, G. W. A. Refsum's disease: Nature of the enzyme defect. Science, 156(3783):1740-1742, 1967.

Two siblings with Refsum's disease, an inherited disorder of lipid metabolism, oxidized intravenously injected uniformly labeled phytanic acid-C^{14} at rates less than 5 percent of those found in normal subjects. The defect in oxidation of phytanic acid persisted in cultures of fibroblasts from the patients' skin. The rate of oxidation of the phytanic acid-C^{14} was less than 1 percent of that found in cultures of fibroblasts from normal skin. However, pristanic acid, previously shown to be the first product of phytanic acid degradation, was oxidized at a normal rate in the patients' cultures. The enzymatic defect in Refsum's disease is in the first step of the pathway for degradation of phytanic acid, that is, in the unusual alpha-oxidative process that leads to a shortening of phytanic acid by one carbon atom. (24 refs.) - (Source: Science)

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National Institutes of Health
Bethesda, Maryland

141 Mudd, S. Harvey, Irreverre, Filadelfo, & Laster, Leonard. Sulfite oxidase deficiency in man: Demonstration of the enzymatic defect. Science, 156(3782):1599-1602, 1967.

A male infant who died at 32 months of age with MR, neurologic abnormalities, and ectopic lenses had no detectable sulfite oxidase in specimens of liver, brain, and kidney. High concentrations of S-sulfo-L-cysteine, sulfite, and thiosulfate were found in the urine with little inorganic sulfate present. Acetate extracts of liver, brain and kidney taken at autopsy were tested with cytochrome c and oxygen as electron acceptors and compared with normal controls. Recombination of the patient's extract with control Ss tissues demonstrated no inhibitors to be present. Other enzymes studied (cystathionine synthetase and cystathionase) were present in normal amounts. Three siblings dying in early infancy with neurologic abnormalities were not studied. This enzyme defect explains the abnormal compounds in the urine and may explain the clinical pathology seen in this S. (17 refs.) - W. A. Hammill.

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142 Keele, Doman K., & Worley, James W. Study of an anabolic steroid. American Journal of Diseases of Children, 113(4): 422-430, 1967.

Oxymetholone, a synthetic anabolic steroid, enhanced linear growth and weight gain in a study of 51 growth retarded (39 MR), underweight children. The steriod was administered to paired groups in a double-blind fashion during the first and third 3 months of a 12-month period. Androgenic side effects (phallic length, pubertal hair) were seen only in the males and did not persist in any Ss 23 months after discontinuing the drug. No effects of accelerated skeletal maturation was seen. Oxymetholone is not the drug of chioce

in treating underweight and growth retarded children due to its existing side effects. (23 refs.) - W. A. Hammill.

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143 van Creveld, S., & *Hooghwinkel, G. J. M. Lipids in blood plasma and erythrocytes in juvenile amaurotic idiocy. Archives of Neurology, 17(3):225-229, 1967.

A 7-year-old boy with juvenile amaurotic idiocy was treated with a new hypocholesteremic agent, cholestyramine resin, which was continued for 18 months and produced a decrease in plasma cholesterol and N-acetylneuraminic acid (NANA) but no clinical improvement or alterations in other plasma or erythrocyte lipids. The patient was Jewish and had a normal family history except for a blind, demented uncle. The patient gradually developed dementia, disorientation, a visual agnosia, ataxia, hypertonicity, and hypermetria. Abnormal blood studies included an increased urea nitrogen, increased alpha and beta globulin, and decreased gamma globulin. The EEG was abnormal and determination of lipids in plasma and erythrocytes suggested a disorder of lipid metabolism. Vacuoles were found in 8 percent of the patient's lymphocytes and in some of his father's lymphocytes. Small light-colored spots were seen in the retina and vision deteriorated. The basis for cholestyramine treatment is evidence that involved lipids in this disorder are, in part, complexes of cholesterol with sphingolipids and with glycerophospholipids and in some cases unbound cholesterol. The dosage of cholestyramine resin was 6 gm daily at first and was increased as high as 24 gm daily. No side-effects occurred. The possibility that a higher dosage would have caused different results is suggested. (23 refs.) - R. Froelich.

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144 Hurler-Hunter phenotypes. Journal of the American Medical Association, 199 (4):271, 1967. (Editorial)

Retrospective physiologic reasoning is used to investigate the mucopolysaccharides by reviewing the problems incurred by patients with Hurler-Hunter syndrome. These defects involve cartilage, connective tissue, endocardium and myocardium, cornea, white blood cells, reticuloendothelial cells, and central nervous system. Major differences are seen within the various categories in timing and severity of medical problems and in mode of genetic transmittance. Evidence suggests that the proband shows significant abnormalities in his in-vitro-cultured mesodermal cells and similar cultures from relatives document the hereditary involvement in a careful way for investigative elaboration. (2 refs.) - J. Snodgrass.

145 MacGillivray, Margaret H., Crawford, John D., & Robey, John S. Congenital hypothyroidism and prolonged neonatal hyperbilirubinemia. Pediatrics, 40(2):283-286, 1967.

A cretinous female infant with hyperbilirubinemia became clinically normal after thyroid replacement. Return of the jaundice after accidental withdrawal of medication and the second return to normal after thyroid replacement documented the relationship between hypothyroidism and hyperbilirubinemia. Except for a head size at the 90th percentile, the delivery and neonatal status were normal. At 2 days of age she developed jaundice that continued until treatment at 5 months of age. Serum bilirubin levels ranged from 9.5 to 20 mg/ml. The infant was inactive, lethargic, hypotonic, and had a faintly cretinous facial appearance. Protein bound iodines were 1.0 and 1.6 mcg/100 ml. Initial treatment was triiodothyronine (T_3) which produced behavioral improvement and reduction of the jaundice in 2 days. Apparent deafness disappeared after treatment. After discharge, a misunderstanding occurred about a change of medication to USP thyroid while T_3 was discontinued; however, exogenous thyroid was restarted. At 16 months of age the S appeared euthyroid and developmentally normal. Prolonged neonatal jaundice that cannot be explained should be considered as a possible manifestation of congenital hypothyroidism. (12 refs.) - R. Froelich.

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146 Winnacker, John L., Becker, Kenneth L., & Moore, Charles F. Pseudohypoparathyroidism and selective deficiency of thyrotropin: An interesting association. Metabolism, 16(7):644-650, 1967.

A mildly MR 45-year-old male was found to have pseudohypoparathyroidism and thyrotropin deficient hypothyroidism, an association that has been found previously in 2 cases. He was a docile, euphoric man with an IQ of 83. He

had a large rounded face, a short thick neck, spade-like hands, and dry, coarse skin. He was hypocalcemic and had a diffuse slow wave EEG disorder. The metacarpals were short and thick on x-ray. He was resistant to parathyroid extract. Other manifestations of pseudohypoparathyroidism included ectopic calcification of the basal ganglia and tendons, lenticular opacities, and abnormal dentition. The hypothyroidism was mild and thyroid stimulating hormone (TSH) was absent in the serum by both bioassay and radioimmunoassay. Of the 21 reported patients with hypothyroidism secondary to TSH deficiency, 5 also had pseudohypoparathyroidism. Hypothyroidism has been suspected in other patients with psuedohypoparathyroidism but thyrotropin levels were not studied. No pathophysiological explanation was found for the association of these 2 disorders in the same patients. A greater frequency of the 2 diseases existing together is suggested. (20 refs.) - R. Froelich.

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147 Paupe, J., & Saint-Martin, J. Aux frontières de l'insuffisance parathyroidienne. (Frontiers of parathyroid insufficiency.) Médecine Infantile, 74(5):413-416, 1967.

Observations and review of the literature help to clarify symptoms of parathyroid insufficiency by classifying the 4 syndromes of hypoparathyroidism (HP), pseudo-hypoparathyroidism (PHP), pseudo-pseudo-hypoparathyroidism (PPHP), and normocalcemic tetany (NCT) in table form. HP and PHP are separated only by frequent anomalies of the phalanges in PHP. PHP and PPHP differ by absence of biological anomalies in the second case. PPHP and NCT differ only by morphologic anomalies in the former. Very little difference exists between NCT and HP. Mental retardation is common in PHP and PPHP. The 4 syndromes have in common the possibility of tetany, a familial tendency, and developmental problems. Morphological anomalies, a common ground of comparison between the syndromes, are absent in NCT, possible in HP, and predominent in PHP and PPHP. Although classification of these syndromes on a pathological basis is helpful, the solution is finding a reproducible parathyroid hormone in reasonable dosage. (6 refs.) - W. Asher.

No address

148 Saint-Martin, J., & Paupe, J. L'insuffisance parathyroidienne de l'enfant. (Parathyroid insufficiency in the infant.) Médecine Infantile, 74(5):397-402, 1967.

Hypoparathyroidism with regard to autoimmune and genetic etiology has stimulated renewed interest. Review of symptomotology includes the tetanic crisis which is most serious in the young infant because of laryngospasm and generalized or localized convulsions. Clinical tests for neuro-muscular hyperexcitability of the tetanic crisis include Chrostek's sign, Weiss's sign, Lust's sign, and Trousseau's maneuver. Electromyography shows a specific activity pattern typical of tetany. Growth problems involve skin, fingernails, hair, and teeth. Cataracts are frequent with intracranial calcifications in the choroid plexis. Serum calcium is always less than 70 mg per liter as reflected by prolonged QT interval in the electrocardiogram. Serum phosphorus is always above 70 mg per liter (normal 40-55 mg/liter). Urinary calcium and phosphorus are also lowered. The Ellsworth-Howard test can be used as a dynamic test for proof of hypoparathyroidism. The disease is frequently associated with adrenal insufficiency and cytomegalic inclusion disease. Known etiologies of hypoparathyroidism include parathyroidectomy, functional (in newborns of hypoparathyroid mothers), and idiopathic. The presence of anti-parathyroid antibody has been shown in 38 percent of these cases. An autosomal dominant mode of inheritance has been proposed. Treatment consists of calcium and vitamin therapy with a high calcium, low phosphorus diet. Ideally, a substitute hormone should be used but is not yet practicable. (15 refs.) - W. Asher.

No address

149 Money, John, Drash, Philip W., & Lewis, Viola. Dwarfism and hypopituitarism: Statural retardation without mental retardation. American Journal of Mental Deficiency, 72(1):122-126, 1967.

Thirty-six children with hypopituitary dwarfism, retarded in somatic growth so that their height was below the third percentile for age, failed to show corresponding retardation in intellectual growth. There was a normal distribution of IQ scores. A combined sample of hypopituitary and constitutional dwarfs yielded a similar IQ distribution. Among the hypopituitary dwarfs the Verbal and the Performance IQ scores on the Wechsler scales were not significantly different. In a subsample of the combined group there was no

significant difference among Cohen's three specific-factor quotients. (12 refs.) - (Source: AJMD)

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150 Melvin, K. E. W., Wright, A. D., Hartog, M., Antcliff, A. C., Copestake, A. M., & Fraser, T. Russell. Acute metabolic response to human growth hormone in different types of dwarfism. British Medical Journal, 3(5559):196-199, 1967.

Twenty patients with dwarfism of various etiologies were injected with human growth hormone (H.G.H.) which resulted in a greater acute metabolic response in those patients with hypopituitarism. Seven had panhypopituitarism. The others included idiopathic dwarfs (6), gonadal dysgenesis (3), chronic corticosteroid excess (4), and 3 adults with other illnesses who were thought to have normal pituitary function. Patients were studied on a metabolic unit with a controlled diet and standardized calcium intake. After basal measurements, 10 mg H.G.H. were given intramuscularly daily for 3 days. Blood urea fell more in the hypopituitary group (11.3 mg/100 ml) than in the idiopathic group (3.6 mg/100 ml). The patients with hypopituitarism showed a greater fall of urinary nitrogen than other Ss but there was some overlap and the distinction was not as clear as the fall of blood urea. All but 1 patient developed a positive nitrogen balance in response to H.G.H. Urinary calcium increased in most Ss with a greater increase in hypopituitary and gonadal dysgenesis patients. No consistent changes in fecal calcium or calcium balance were found. The acute metabolic response was greater in those patients who had H.G.H. response to insulin hypoglycemia. Three of 4 patients given long-term H.G.H. treatment responded with accelerated growth. (23 refs.) - R. Froelich.

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151 Hook, Ernest B., & Reynolds, John W. Cerebral gigantism: Endocrinological and clinical observations of six patients including a congenital giant, concordant monozygotic twins, and a child who achieved adult gigantic size. Journal of Pediatrics, 70(6): 900-914, 1967.

For lack of a more precise term, the diagnosis of "cerebral gigantism" was applied to 6 children (5 males and 1 female) with idiopathic gigantism who had macrocrania, large extremities, large hands and feet, and cerebral dysfunction. MR or borderline intelligence was present in 5 patients reported in the literature but was not as evident in the study children. Three definitely had normal intelligence, 2 were between 70 and 80 IQ, and 1 had an IQ of 62 at age 4½ and 88 at age 12. All but 1 were large at birth. One was a congenital giant and the others had accelerated growth in early childhood. Two were monozygotic twins concordant for the disorder. Growth hormone and insulin levels during glucose tolerance tests were normal except for a paradoxical increase in serum growth hormone in 1 patient. It is possible that at least some of the children are simply variants in a normally distributed population and represent a "pseudosyndrome." Because of the benign nature and apparent heterogenous origin of the disorder the diagnosis should be made by exclusion. Expected size of head, facial features, and extremities in very large tall children is not really known thus creating a lack of valid standards with which to evaluate these children. (25 refs.) - R. Froelich.

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152 American Academy of Pediatrics, Committee on Nutrition. Nutritional management in hereditary metabolic disease. Pediatrics, 40(2):289-304, 1967.

During the past 13 years, dietary treatment of many hereditary metabolic diseases has become possible. These diseases result from abnormal amount, structure, or activity of enzyme systems. Treatment, thus far, only attempts to modify the biochemical environment to offset this effect. Improvement may be seen if: the substrate is restricted as in phenylketonuria, the normal product is supplemented as in adrenogenital syndrome, a coenzyme like vitamin B_6 is added, or the product is replaced as in hemophilia. Before dietary management of any disease begins, one must first have knowledge that the disease is harmful if untreated and that the treatment is beneficial and not harmful to the affected or others if inadvertently received. Future

measures will include treatment of unaffected mutant mothers to afford better intrauterine milieu for offspring. (139 refs.) - W. A. Hammill.

No address

153 Schwartz, Lawrence H., Snider, Jessie, & Schwartz, Jane E. Psychiatric case report of nutritional battering with implications for community agencies. Community Mental Health Journal, 3(2):163-169, 1967.

The case history of a 19-year-old female who was subjected to 13 years of nutritional battering and severe psychological trauma is presented. She was mentally, socially, and physically retarded at 13 years of age when she was legally removed from the home and transferred to a residential center. She was considered to be a dwarf and at age 7 weighed 20 pounds and was only 35½ inches tall. Despite evidence for a number of years that the girl was being starved, physically abused, and emotionally rejected nothing could be done because of legal roadblocks. The patient had a scapegoat role in a very pathological family consisting of a cruel, paranoid, psychotic "folie a deux" between the 2 parents. After transfer to residential treatment the child's growth dramatically increased. She gradually began to participate with people from her usual withdrawing and fearfulness. She underwent tutoring for several years and finally was able to do average school work. The family continued to resist by refusing to support their daughter's expenses and incorporated the situation into their paranoid system. Earlier interruption of this problem and treatment of the family would have benefited the patient and the community. (No refs.) - R. Froelich.

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New growths

154 Rundle, A. T., Fannin, Christine V. & Bartlett, K. Serum proteins and serum enzymes in tuberous sclerosis. Journal of Mental Deficiency Research, 11(2):85-96, 1967.

Serum proteins and enzymes were determined in 14 patients with tuberous sclerosis and 12 MR controls revealing a significant increase of (alpha and beta)-globulins and decrease of alkaline phosphatase among the patients with tuberous sclerosis as compared to controls. All Ss were obtained from hospitals for the MR. Tuberous sclerosis patients were between 18 and 67 years of age. Enzyme determinations included alkaline phosphatase, lactic acid dehydrogenase cholinesterase, amylase, phosphohexose isomerase, alpha-hydroxybutyric acid dehydrogenase, amlic acid dehydrogenase, glutamic-oralacetic transaminase, glutamic pyruvic transaminase, and creatine phosphokinase. The mean alkaline phosphatase concentration was 1.36 sigma units for the sclerosis group compared to 1.76 for the controls ($0.01 > P < 0.001$). Other determinations included serum protein and uric acid. The only differences were the combined (alpha + beta)-globulin fraction which was a mean of 2.21 g/100 ml for the sclerosis group compared to 1.56 for the controls ($0.02 > P < 0.01$). The above findings open new avenues of investigation into the biochemistry and genetics of tuberous sclerosis. (28 refs.) - R. Froelich.

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155 Rosenberg, Roger N., Sassin, Jon, Zimmerman, Earl A., & Carter, Sidney. The interrelationship of neurofibromatosis and fibrous dysplasia. Archives of Neurology, 17(2):174-179, 1967.

Fibrous dysplasia was discovered in a 14-year-old girl who came from a family which had 9 cases of neurofibromatosis. The girl had abnormal bone sclerosis in the frontal bone and floor of the anterior fossa and loss of vision in 1 eye from optic atrophy and proptosis. Intelligence was normal. The acid and alkaline phosphatase in the serum were elevated. The patient's mother and 9 siblings all demonstrated cafe-au-lait spots. The mother had multiple neurofibromata. Four siblings and the mother had an abnormal roentgenographic survey. Two siblings were MR. Except for the patient, alkaline phosphatase values were normal. A genetic relationship between neurofibromatosis and fibrous dysplasia has been suggested which is supported by the association in this family of 2 very rare disorders. This occurrence by chance alone is highly improbable. The evidence against a relationship between the 2 disorders are genetic differences, a female predominance for fibrous dysplasia, and no familial association prior to this case. Similarities between the 2 disorders include

cutaneous disease (cafe-au-lait spots), osseous lesions, and endocrine disease. (27 refs.) - R. Froelich.

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156 Treating brain tumors in children. Radiation's role is becoming more significant. Journal of the American Medical Association, 200(12):34-35, 1967.

Encouraging success of irradiation treatment for children with brain tumors was reported at the annual meeting of the American Radium Society. Indications for irradiation include incomplete surgical removal, pontine location, postoperative recurrence without prior radiation, and failure to remove during exploration. Contraindications mentioned are inadequate diagnosis, insufficient proof of suspected recurrence, belief of complete extirpation in benign tumors, previous intensive irradiation, and evidence of diffuse degenerative encephalitis. Among 12 survivors of 37 children treated with irradiation, not 1 is mentally disabled or insane. Based on experience with 12 children with craniopharyngiomas, it is proposed that radiotherapy be the treatment of choice. The full adult dose of 5,000 rads in 7 weeks is prescribed for children above the age of 3 who are being treated for medulloblastoma. Acceptance of radiation therapy in management of primary brain tumors in children reflects advances in neurosurgical procedures and diagnosis. (No refs.) - W. Asher.

157 Wilson, Charles B., & Norrell, Horace A., Jr. Secondary tumors of the brain. Diseases of the Nervous System, 28(7):433-440, 1967.

The incidence, diagnosis, pathology, and treatment of metastatic brain disease are reviewed. The frequency of secondary brain tumors is estimated to be between 11 and 16 percent of extracranial malignant tumors. The highest rates occur with carcinoma of the lung, malignant melanoma, and carcinoma of the breast. The brain metastasis may present first with the primary tumor being undetectable in one-third of the cases. The tumors are frequently surrounded by edema that is larger than the tumor itself. A metastasis can occur in a variety of sites with a variety of clinical features. Most patients have increased intracranial pressure; headache is a common presenting symptom. Dementia can be the primary presentation. A number of diagnostic procedures often allow early diagnosis. The 4 treatment methods are surgery, chemotherapy, corticosteroids, and irradiation. Corticosteroids produce clinical improvement and temporarily reduce cerebral edema in most patients. A number of chemotherapeutic agents have produced clinical improvement, some of which have been dramatic, in more than one-half of patients. Irradiation is palliative and effective in some cases and surgery may rarely produce a cure. (74 refs.) - R. Froelich.

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158 Lassman, L. P., & Arjona, V. E. Pontine gliomas of childhood. Lancet, 1(7496):913-915, 1967.

Of 27 children with pontine gliomas, 24 presented with a cranial-nerve palsy, 22 with cerebellar signs, 22 with pyramidal signs, 14 with hemiparesis or hemiplegia, 6 with increased intracranial pressure, and 8 with mental symptoms including MR in 2. Out of 265 children with intracranial tumors, 27 had pontine gliomas. Fourteen were males and 13 were females with an age range from 4 months to 13 years. Only the 4-month-old infant was below 3 years of age and 5 years of age was the peak incidence. Six of the 8 children with mental symptoms were very similar with initial withdrawal and apathy which changed to an aggressive, hyperkinetic phase. Two patients presented with progressive dementia. Air ventriculography was the most helpful radiological diagnostic procedure with the use of contrast media if necessary. High voltage therapy is preferable to surgical treatment and the last 15 patients in this series were treated with high-voltage radiation. Twelve of these responded to some degree but never longer than 18 months. The mean survival of treated children was 15.1 months as compared to 4 months for the untreated group. The histological diagnoses of 14 cases were 10 astrocytomas, 3 spongioblastomas polare, and 1 glioblastoma multiforme. (13 refs.) - R. Froelich.

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Unknown prenatal influence

159 Pearce, P. M., Pitt, D. B., & Roboz, P. Six cases of de Lange's syndrome. In: Australian Group for the Scientific Study of Mental Deficiency. Proceedings of the Fifth Annual Interstate Conference on Mental Deficiency. Van Pelt, J. S., ed. Brisbane, Australia, October 1966, p. 54-62. Also Medical Journal of Australia, 1(March 11): 502-506, 1967.

A survey of 1,000 moderately and severely retarded children (IQ below 50) revealed 6 cases of de Lange's syndrome. Characteristic features are: low birth weight, dwarfism, SMR, muscular hypertrophy and hypertonia, synophrion, low hairline, long eyelashes, narrow palpebral fissure with flat nose bridge, low deep set ears, carp-like mouth, microbrachycephaly, narrow arched palate, webbed neck, simian crease in flat spade-like hands, clinodactyly, limited extension of elbows, partial webbing of toes, hypertrichosis, and immature testes. Laboratory data, chromosome studies, and dermatoglyphics were normal. The similarity of the cases suggests genetic causation and 2 family studies suggest an autosomal recessive transmission. The incidence of the syndrome in the general population is approximately 1 per 100,000. (16 refs.) - W. A. Hammill.

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160 McArthur, R. G., & Edwards, J. H. De Lange syndrome: Report of 20 cases. Canadian Medical Association Journal, 96(17): 1185-1198, 1967.

Historical, clinical, laboratory, and radiographic findings indicated that the 20 patients (CA 3 months to 18 years) with de Lange syndrome revealed characteristic features but no chromosomal abnormalities. The syndrome is characterized by: MR; distinctive facies, hands, and feet; hypertrichosis; and retarded growth. The first description of the de Lange syndrome was in 1933 and since then 69 cases have been reported in addition to the 20 in this paper. The diagnosis must be made from the history and physical examination. The face is distinguished by a low hairline, prominent eyebrows, long eyelashes, uptilting nose, narrow palpebral fissures, epicanthic folds, elongated philtrum, thin upper lip, carp-like mouth, and a receding chin. Findings on x-ray examination include skull deformities, delayed ossification, and short metacarpals. Familial cases are unusual. Prematurity is frequent and problems in early infancy are usually present such as cyanosis, feeding problems, infections, and delayed milestones. MR is always present. The etiology is obscure but the generalized nature of the disorder strongly suggests a genetic disorder, probably involving a recessive gene. (14 refs.) - R. Froelich.

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161 Pitt, D., Roboz, P., Williams, A., & Anderson, R. McD. A case of Sjögren-Larsson syndrome. Australian Paediatric Journal, 3(1):54-57, 1967.

A 6-year-old girl who had a variation of the Sjögren-Larsson syndrome revealed severe MR, congenital ichthyosis, and retinopathy. She did not have spastic diplegia as Sjögren and Larsson described in 1957, but she did have epilepsy, which began at 3 weeks of age. Other abnormalities included skeletal deformities of the arms, microgyria, microcephaly, coloboma of the right iris and choroid, a cyst of the fourth ventricle, and nodules of ectopic grey matter in the periventricular white matter. The immediate cause of death was bronchopneumonia. A number of varying patterns of abnormalities have been reported with ichthyosis and MR being present most consistently. The disorder is caused by an autosomal recessive gene. The chromosome karyotype in this case was normal. (20 refs.) - R. Froelich.

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162 Mandell, Frederick, Ogra, Pearay L., Horowitz, Sidney L., & Hirschhorn, Kurt. Oral-facial-digital syndrome in a chromosomally normal male. Pediatrics, 40 (1):63-68, 1967.

A 20-month-old white male with clinical features of oral-facial-digital (OFD) syndrome had a normal chromosome complement of 46 and a normal XY sex chromosome constitution. The few other reported males with OFD syndrome had abnormal karyotypes. The infant had retarded motor and mental development and the usual features of OFD syndrome including flattened occiput, frontal bossing, broad epicanthic folds, median pseudocleft of the upper lip, high arched palate, hypertrophied frenula, lobulated tongue, hypertrophy of the lingual frenulum, bilateral syndactyly, supernumerary digits, bifid large toes, 4 toes on the right foot, and polysyndactyly of the left foot. He also had diastasis recti and

palpable liver. A "long" Y chromosome was found which was a normal family variant. The OFD syndrome was previously thought to be lethal for males with a normal karyotype. This patient must represent one extreme of the spectrum of expressivity in this disorder. (17 refs.) - R. Froelich

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163 Ponté, C., & Lefebvre, G. Le syndrome oculo-cerebro-renal de Lowe. (The oculo-cerebro-renal syndrome of Lowe.) Medecine Infantile, 74(3):255-275, 1967.

The syndrome of Lowe studied in detail in 6 of 8 human subjects reveals congenital cataracts with eventual glaucoma associated with cerebral demyelinization and nephropathy as a result of genetic transmission. The syndrome becomes evident in the neonatal period and the subject reaches equilibrium with its biological abnormalities in rare cases of survival. Most specific to the syndrome is the nephropathy marked by tubular acidosis, proteinuria, nephrolithiasis, and glycosuria. Hyperaminoaciduria is almost always present. Histologic examination reveals colloidal cylinders in the renal tubules but is not pathognomonic. The disorder sometimes produces rickets through a defect in calcium absorption in the gut and failure in tubular resorption of phosphates which is complicated by a plasma acidosis. Although for many years thought to be a major symptom, rickets today assumes a contingent role. The disease resembles cystinuria, Wilson's disease, and especially galactosemia. Genetic origin is certain and a sex-linked recessive mode of inheritance is proposed. (11 refs.) - W. Asher.

No address

164 Švorc, Jiří, Masopust, Jaroslav, Komárková, Alena, Macek, Milan, & Hyánek, Josef. Oculocerebrorenal syndrome in a female child. American Journal of Diseases of Children, 114(2):186-190, 1967.

The oculocerebrorenal syndrome, a disorder thought to be inherited as a sex-linked characteristic, is described in a 2-year-old girl. The disorder has never before described a female. The patient had bilateral congenital cataracts which were surgically removed. She was malnourished, obviously MR, pale, strikingly hypotonic, and had persistent proteinuria. She had bilateral enophthalmos and a strabismus. The EEG was abnormal and a mild internal hydrocephalus was present. Amino-aciduria was found with increased alanine and lysine excretion. Renal reabsorption of bicarbonate was defective and a high excretion of alpha-ketoglutaric and pyruvic acids was found. The origin of the metabolic acidosis did not appear to be confined to abnormal ammonia production in the kidneys. The sex of the child was confirmed by a positive sex chromatin and 46/XX chromosomal karyotype. Her external genitalia were normal. Urine and slit-lamp examination of the patient's relatives were negative for amino acids or ocular abnormalities. The explanation for the occurrence of oculocerebrorenal syndrome in a female may be that there is another mode of inheritance in this case or that intrauterine damage causes a disorder resembling Lowe's syndrome. (22 refs.) - R. Froelich.

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165 Nellhaus, Gerhard. The bobble-head doll syndrome: A "tic" with a neuropathologic basis. Pediatrics, 40(2):250-253, 1967.

A 10-year-old boy with the "bobble-head doll syndrome" made an excellent recovery after surgical treatment of hydrocephalus. The patient had appeared normal until 7 weeks of age when head enlargement was noticed after a severe illness. Development was normal and IQ at 5 and 10 years of age was over 100. Head-bobbing, described as a rhythmic side-to-side movement began at 9 years of age. The movement would occasionally involve the trunk and would disappear in his sleep. Hydrocephalus caused by aqueductal stenosis was confirmed by pneumoencephalography and ventriculography. A ventriculo-auriculostomy was performed using a Pudenz valve and 6 weeks later a Holter valve was inserted. The head-bobbing gradually disappeared and follow-up examination at 8 months after surgery showed much improvement. Two similar cases of this syndrome have been described, both with chronic slowly-progressive hydrocephalus. In each case, surgical treatment of the hydrocephalus resulted in improvement or disappearance of the head-bobbing. The recognition of this "tic" as having a neuropathological basis is important in treatment. The neurophysiological basis of this disorder is not known. (11 refs.) - R. Froelich.

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166 McKusick, Victor A., Mahloudji, Mohsen, Abbott, Margaret H., Lindenberg, Richard, & Kepas, Demetrios. Seckel's bird-headed dwarfism. New England Journal of Medicine, 277(6):279-286, 1967.

Three siblings (2 females and 1 male) from a family of 11 children presented features of bird-headed dwarfism and autopsy examination in 2 demonstrated pongidoid micrencephaly. All 3 lived to an advanced age (ages 75, 56, and 58). The father came from an inbred kindred from which at least 4 autosomal recessive disorders could be recognized. The 3 affected siblings demonstrated MR, bird-like facies, microcephaly, low-birth-weight dwarfism, and multiple malformations including strabismus, scoliosis, genitourinary malformations, hypoplastic thumb, bilateral hip dislocations, hypoplastic patella, and club-foot. Information about the male sibling was scanty since he died in 1946 and was never institutionalized, but 1 of the other 2 was estimated to have a MA of 5 years. They were friendly and manageable. Examination of the brains in 2 cases revealed small cerebral hemispheres with a much simplified gross structure. The primitive convolutional pattern resembled the chimpanzee or gorilla brain (pongidoid micrencephaly). Cerebellum development was nearly normal and was large in relation to the cerebrum. Histology did not reveal further pathology. The findings in these patients resemble most closely the syndrome described by Seckel and termed bird-headed dwarfism. Autosomal recessive inheritance seems most likely. (22 refs.) - R. Froelich.

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Baltimore, Maryland 21205

167 Angle, Carol R., McIntire, Matilda S., & Moore, Ralph C. Cloverleaf skull: Kleeblattschädel-deformity syndrome. American Journal of Diseases of Children, 114(2): 198-202, 1967.

A description of 2 infants with the Kleeblattschädel-deformity syndrome (cloverleaf skull) brings the total reports of this disorder to 19 cases. The syndrome consists of hydrocephalus associated with intra-uterine synostosis of the coronal and lambdoidal sutures which results in bulging in the areas of the sagittal and squamosal sutures. The result is a grotesque tri-lobed skull with proptosis, facial deformities, and downward displacement of the ears. Facial abnormalities included a deeply recessed nasal root, a beak nose, prognathism, and secondary corneal damage. Case 1 was a female infant who died at 54 days of age in a state home for the MR. She demonstrated bony ankylosis of the elbows which conforms with 13 recorded cases of associated bony deformities in this syndrome. She also had spina bifida, partial webbing of the toes, and an equinovarus deformity which suggested an overlap with acrocephalosyndactylism. Case 2 was a male infant who did not have other skeletal deformities and underwent bilateral surgical excision of the coronal suture followed by reclosure of the upper portion and cranial morcellation procedures. Both patients had a pituitary insufficiency possibly related to the hydrocephalus. (7 refs.) - R. Froelich.

University of Nebraska
College of Medicine
Omaha, Nebraska 68105

168 Salmon, James H. Puncture porencephaly. American Journal of Diseases of Children, 114(1):72-79, 1967.

Four infants with hydrocephaly and aggressive porencephaly were treated by ventricular puncture. A special Rickham reservoir was used in 1 infant in order to prevent the complication of brain erosion from repeated needle puncture. Three of the 4 newborn infants were premature. All had severe central nervous infection. The required vigorous life saving treatment resulted in damage to the ependymal lining of the ventricle. It is postulated that the ependymal lining functions as a protective coating. When it is destroyed the pressure and pulsation of the cerebrospinal fluid erodes the unresisting brain tissue and produces a cyst. All infants survived. The infant with a Rickham reservoir received it 1 week after onset of treatment and it remained in place for 27 days. At that time a ventriculo-pleural shunt was performed. The infant did not develop a cyst at the site of the reservoir as the other infants had. It is suggested that a special infant reservoir made by the Holter Company be used to prevent pressure on the scalp and scalp necrosis. (3 refs.) - R. Froelich.

Division of Neurosurgery
3231 Burnet Avenue
Cincinnati, Ohio 45229

169 Poznanski, Andrew K., & Stephenson, John M. Radiographic findings in hypothalamic acceleration of growth associated with cerebral atrophy and mental retardation (cerebral gigantism). Radiology, 88 (3):446-456, 1967.

Ten cases of Sotos syndrome--cerebral

gigantism--are described. The condition consists of excessively rapid growth rate, characteristic facies, and nonprogressive MR. The radiological findings include a large skull with ventricular dilatation (6 of 6 cases) and advanced skeletal age (10 of 10 cases), with phalangeal maturation being greater than the carpal (10 of 10 cases). The advanced skeletal age is consistent with the height age and with the levels of 17-ketosteroids. Multiple other congenital anomalies and variants frequently associated include cavum septum pellucidum (2 of 6 cases), cavum velum interpositum (1 of 6 cases), peculiar configuration of the dorsum sellae (6 of 10 cases), increased interorbital distance (7 of 10 cases), and anterior fontanelle bones (3 of 10 cases). Laboratory data and chromosomal studies are usually within normal limits. (41 refs.) - (Source: Journal of the American Medical Association, 200(1):224, 1967)

Henry Ford Hospital
Detroit, Michigan

170 Research into Hydrocephalus and Spina Bifida. (Developmental Medicine and Child Neurology, Supplement No. 13.) London, England, William Heinemann Medical Books, 1967, 139 p.

The 1966 Proceedings of the Society for Research into Hydrocephalus and Spina Bifida held at Cardiff, Wales are presented. Of 425 cases of spina bifida cystica who were untreated, 65 survived and only 3½ percent could be considered normal. Of 182 unoperated cases of hydrocephalus, 82 showed spontaneous arrest of which 75 percent were educable. Of 70 children with meningomyelocele or encephalocele, one-third attended ordinary school and one-half attended special schools. A family study in Wales showed that the incidence of spina bifida and anencephaly among siblings of affected patients was 8 times that of the normal population. Treatment experience with 894 infants with open myelomeningocele was presented. Three participants recommended closure of the lesion within the first 24 hours of life; however, another concluded that there were advantages in controlling hydrocephalus before local myelodysplasia repair. Ultrasound and radiological diagnostic techniques were discussed. Complications with shunts and the urinary tract were presented. An implantable volume control pump may be the new answer in controlling hydrocephalus. (171 refs.) - R. Froelich.

CONTENTS: Follow-up of 65 Survivors from the 425 Cases of Spina Bifida Born in South Wales between 1956 and 1962; Spontaneously Arrested Hydrocephalus; Spina Bifida in Birmingham; The Assessment of School Placement in Children Suffering from Encephalocele and Meningomyelocele in the City of Liverpool; The Genetics of the Major Central Nervous System Malformations, Based on the South Wales Sociogenetic Investigation; Survival and Paralysis in Open Myelomeningocele, with Special Reference to the Time of Repair of the Spinal Lesion; Early Closure of Myelomeningocele with Especial Reference to Leg Movement; A Comparative Study of Meningomyelocele Repair or Cerebrospinal Fluid Shunt as Primary Treatment in 90 Children; The Prognosis of Open Myelocele with a Note on a Trial of Laurence's Operation; The Prognosis of Occipital Encephalocele; The Examination of the Normal and Hydrocephalic Infant Brain Using Ultrasound; A Radiological Study of the Central Canal in Myelomeningocele; A Preliminary Report on a Biological Fluid Transfer System for the Treatment of Hydrocephalus; Complications Relating to Ventricular-Venous Shunts: A Five-Year Study; Urinary Investigations in Spina Bifida Cystica During the First Month of Life; The Use of Colonic Conduit in the Treatment of Urinary Incontinence in Congenital Spinal Palsy; Derangement of Temperature Control in Hydrocephalus.

171 Laurence, K. M., & Tew, B. J. Follow-up of 65 survivors from the 425 cases of spina bifida born in South Wales between 1956 and 1962. In: Research into Hydrocephalus and Spina Bifida. (Developmental Medicine and Child Neurology, Supplement No. 13.) London, England, William Heinemann Medical Books, 1967, p. 1-3.

Sixty-five survivors of a series of 425 cases of spina bifida cystica who were not given early treatment were followed up. Of the 18 cases of meningocele, none had hydrocephalus, 13 were physically normal, and the mean IQ was 94. Of the 36 myeloceles and 11 encephaloceles, only 13 had little or no physical disability, at least 32 had hydrocephalus, and the mean IQ was about 86. Altogether only 3½ percent of the whole series, including stillbirths, survived with normal or near normal physical capacities and IQs above 85. (1 ref.) - (Author summary)

The Welsh National School of Medicine
Llandough Hospital
Penarth, Glamorgan, South Wales

172 Laurence, K. M., & Coates, Stephen. Spontaneously arrested hydrocephalus. In: Research into Hydrocephalus and Spina Bifida. (Developmental Medicine and Child

Neurology, Supplement No. 13.) London, England, William Heinemann Medical Books, 1967, p. 4-13.

In an investigation of 182 unoperated cases of hydrocephalus previously reported in 1958, the 82 survivors showing spontaneous arrest were re-examined after a 6-year interval. These included 76 of the 81 whose hydrocephalus was arrested in 1958 (5 having died in the meantime), 5 who were then still progressive, and 1 who was untraced. Seventy-five percent of the survivors were now educable, 45 percent having a 'normal' IQ (over 85) and more patients having higher IQs than previously, but most of the ineducable patients have IQs below 20. There were 26 patients (32 percent) in normal schools or normal employment, and 19 (25 percent) in special schools or sheltered employment, the remainder being less usefully occupied. There was a close relationship between both physical disability and IQ and the normalcy of the patient's life (social attainment); the more intelligent and less handicapped, with some exceptions, tending to lead a more normal life. There was also a correlation between the amount of emotional disturbance and the degree of physical or mental handicap, those more handicapped tending to be more disturbed. The results suggest that severely brain-damaged patients do not improve. Most of the others either maintain their progress or improve with age, overcoming some of their physical and mental handicaps. Some who appear to be physically normal do not fulfill their expectations and probably also have suffered brain damage. While surgery should be undertaken without delay in progressive hydrocephalus to prevent additional brain damage, caution should be exercised when complete spontaneous arrest has taken place. (6 refs.) - (Author summary)

The Welsh National School of Medicine
Llandough Hospital
Penarth, Glamorgan, South Wales

173 Knox, E. G. Spina bifida in Birmingham. In: Research into Hydrocephalus and Spina Bifida. (Developmental Medicine and Child Neurology, Supplement No. 13.) London, England, William Heinemann Medical Books, 1967, p. 14-22.

An examination is made of all the children born with spina bifida cystica in the city of Birmingham in the 3 years 1960-1962. Twenty-two percent were stillborn, 51 percent dead by four weeks, and 76 percent dead by 1 year. Ten percent will be alive and well at 5 years and not more than 11 percent alive and disabled. Patterns of death and survival are described, and the milieu of surgical decision-making examined. Surgical attitudes are likely to settle towards either (1) early operation upon children with no paralysis and no operations on other children, or (2) early operations for all viable affected children. Stable intermediate positions are not envisaged. The requirement for special school places is also likely to settle towards 1 of 2 positions corresponding approximately with 1 and 7 places per 1,000 births. (3 refs.) - (Author summary)

Department of Social Medicine
University of Birmingham
Birmingham, England

174 Burns, R. The assessment of school placement in children suffering from encephalocele and meningomyelocele in the city of Liverpool. In: Research into Hydrocephalus and Spina Bifida. (Developmental Medicine and Child Neurology, Supplement No. 13.) London, England, William Heinemann Medical Books, 1967, p. 23-29.

Of 70 children between 2 and 5 years with meningomyelocele or encephalocele, 23 (32.9 percent) were considered fit to attend ordinary school, 38 (54.3 percent) required a special school for the physically handicapped, 6 (8.6 percent) were grossly handicapped physically and mentally and considered unsuitable for any school. One child was recommended for a school for MR children and 2 blind children were recommended for a school for the blind. Intellectual capacity varied from a developmental quotient of less than 20 to an IQ of 148. Of the 64 children considered suitable for school, the average IQ was 87.2. Sixty children had meningomyelocele (42 in the lumbar area) and 10 had encephalocele. Physical handicaps included lower limb paralysis (42), hydrocephalus (31), complete incontinence (26), double incontinence (42), orthopedic defects (32), blindness (3), strabismus (12), speech defects (7), hearing defects (3), and epilepsy (8). The findings of this study have stimulated planning for the erection of a new school for physically handicapped children in Liverpool. Because of the complicated problems these children present, a panel of specialists has been used for evaluation at regular intervals. (No refs.) - R. Froelich.

School Health Service
Dale Street
Liverpool 2, England

175 Carter, C. O., Laurence, K. M., & David, P. A. The genetics of the major central nervous system malformations, based on the South Wales sociogenetic investigation. In: Research into Hydrocephalus and Spina Bifida. (Developmental Medicine and Child Neurology, Supplement No. 13.) London, England, William Heinemann Medical Books, 1967, p. 30-34.

A preliminary report is given of a family study from South Wales based on 424 index patients with spina bifida and 361 with anencephaly. Overall, a little more than 5 percent of the brothers and 7 percent of the sisters had spina bifida or anencephaly, that is about 8 times the normal population incidence in South Wales. (2 refs.) - (Author summary)

Clinical Genetics Research Unit
Institute of Child Health
London W.C. 1, England

176 Sharrard, W. J. W., Zachary, R. B., & Lorber, J. Survival and paralysis in open myelomeningocele with special reference to the time repair of the spinal lesion. In: Research into Hydrocephalus and Spina Bifida. (Developmental Medicine and Child Neurology, Supplement, No. 13.) London, England, William Heinemann Medical Books, 1967, p. 35-50.

Five hundred twenty-six infants born between 1955 and 1962 with an open myelomeningocele (myelocele, rachischisis) were followed up to 1966. The spinal lesion had been treated by operation within the first 4 days of life in 274 and by initial conservative management in 252 infants. Various treatment groups are defined and comparability between groups is established. Mortality and lower limb paralysis are shown to be greater in children whose spinal lesion had been treated conservatively whatever the level and size of the spinal lesion. The proportion of hydrocephalus was the same in both treatment groups but the mortality of those with hydrocephalus in whom the spinal lesion had been treated conservatively was significantly greater. The best results were obtained in infants in whom the spinal lesion was closed operatively within the first 24 hours of life. (11 refs.) - (Author summary).

Children's Hospital
Western Bank
Sheffield 10, England

177 Brocklehurst, G., Gleave, J. R. W., & Lewin, W. S. Early closure of myelomeningocele with especial reference to leg movement. In: Research into Hydrocephalus and Spina Bifida. (Developmental Medicine and Child Neurology, Supplement, No. 13.) London, England, William Heinemann Medical Books, 1967, p. 51-56.

A consecutive series of 25 infants with open myelomeningoceles has been studied before and after surgical closure. Early closure can be achieved with a low mortality when performed within the first 24 hours of life and accompanied by a low incidence of infection and early surgical treatment of the hydrocephalus. Spinal reflexes were noted frequently in the neurological assessment and stimulation of the abnormal plaque and nerve roots at operation suggested that segmental activity occurs in many of these lesions. Clinical assessment indicated that although there may be apparent improvement in voluntary function in some cases within the first few weeks after operation, there is later no significant increase in useful leg function compared with the pre-operative levels. (8 refs.) - (Author summary)

Department of Neurological Surgery
and Neurology
Addenbrooke's Hospital
Cambridge, England

178 Shurtleff, D. B., & Foltz, E. L. Comparative study of meningomyelocele repair or cerebrospinal fluid shunt as primary treatment in spina bifida. In: Research into Hydrocephalus and Spina Bifida. (Developmental Medicine and Child Neurology, Supplement No. 13.) London, England, William Heinemann Medical Books, 1967, p. 57-64.

From a study of 119 children with meningomyelocele who were treated in different ways, it is reported that there is a definite advantage in controlling the hydrocephalus before considering local myelodysplasia repair. This approach significantly reduced central nervous system infection and local myelodysplasia repair breakdown rates. Repair of the lesion was unnecessary in 40 percent of the children treated first by control of the hydrocephalus. The authors recommend primary control of cerebral spinal fluid hypertension, with closure of only widely opened dysplastic areas as an emergency measure. Subsequently, there may be indications for late surgical repair such as a persistent or enlarging sac, progressive neurological deterioration of the lower limbs, or family concern. (15 refs.) - (Author summary)

Department of Pediatrics
University of Washington
School of Medicine
Seattle, Washington

179 Fernandez-Serrats, A. A., Guthkelch, A. N., & Parker, S. A. The prognosis of open myelocele with a note on a trial of Laurence's operation. In: Research into Hydrocephalus and Spina Bifida, (Developmental Medicine and Child Neurology, Supplement No. 13.) London, England, William Heinemann Medical Books, 1967, p. 65-74.

Study of a series of 224 cases of open myelocele shows that the mortality during the first year of life is lower in those operated upon immediately after birth than in those in whom operation is delayed beyond 48 hours. This is believed to be because cases operated immediately show a lower incidence of infection (8 percent) than those operated later (in whom the infection rate rises to 40 percent if the operation is performed between the 7th day and the end of the first month of life) or treated conservatively (28 percent). At the moment of birth many cases of open myelocele show normal movements of the lower limbs, thus proving that neural impulses are being conducted across the exposed neural plaque; these movements degenerate and disappear more or less completely in cases in whom the lesion is not closed within 24 hours. We have not found any cases of significant amelioration after that time either spontaneously or after later surgery. Operation within 24 hours not only preserves such movement as remains but can in certain circumstances be followed by improvement or even normal motor function. In our experience, recovery can be expected (a) when there is simply a generalised weakness of all muscles; (b) in cases of spastic paralysis showing spasm-in flexion; and (c) in some cases of flaccid paralysis at lumbar or lumbosacral level, provided there are no established deformities of the limbs. It is suggested that the cases of spontaneous spasm-in-flexion result from irritation of the neural tissue of the exposed plaque, which is reversible during the first 24 hours of life but not thereafter. (6 refs.) - (Author summary)

Royal Manchester Children's Hospital
Pendlebury, England

180 Lorber, John. The prognosis of occipital encephalocele. In: Research into Hydrocephalus and Spina Bifida. (Developmental Medicine and Child Neurology, Supplement No. 13.) London, England, William Heinemann Medical Books, 1967, p. 75-86.

Forty-five infants with occipital encephalocele and 10 with occipital meningocele were admitted for treatment in a 5-year period. Fourteen with encephaloceles died either before or during operation or very soon afterwards. Twenty-eight of the survivors had hydrocephalus. There were 11 late deaths. The single most important prognostic factor is the presence or absence of brain matter in the sac of the lesion. Hydrocephalus is a common and serious associated malformation which can be minimized by early treatment. Microcephaly is also very common and is associated with mental retardation and physical defects. Most cases of occipital meningocele may be expected to survive without sequelae, but occipital encephalocele carries a high mortality rate and the survivors tend to be severely mentally and physically affected. (7 refs.) - (Author summary)

University of Sheffield
Sheffield, England

181 Emery, John L. The examination of the normal and hydrocephalic infant brain using ultrasound. In: Research into Hydrocephalus and Spina Bifida. (Developmental Medicine and Child Neurology, Supplement No. 13.) London, England, William Heinemann Medical Books, 1967, p. 87-95.

In the brain of the newborn, the difference in specific acoustic impedence between the fluid in the ventricles and the brain tissues appears insufficient to produce an echo using the range of ultrasonic activity now available. In the newborn brain, echoes appear to arise at the junction between myelinated and non-myelinated brain tissue. The most consistent echoes come from tracts of myelinated nerves running almost at right-angles to the ultrasonic beam. Echoes usually are not obtained from tissues of the brain on the side proximal to the ultrasonic probe, probably owing to the curvature of the proximal brain acting as a convex mirror dispersing reflected rays, and to amplifier paralysis. In children with hydrocephalus between the ages of 2 months and 18 months, the echo from the brain tissue does not appear to arise at the brain/cerebrospinal fluid junction, but at a distance of about 1 cm from the surface, and thus may give a false measurement of brain thickness. (17 refs.) - (Author summary)

Children's Hospital
Sheffield, England

182 Andersson, Hugo, Carlsson, Carl-Axel, & Rosengren, Klas. A radiological study of the central canal in myelomeningocele. In: Research into Hydrocephalus and

Spina Bifida. (Developmental Medicine and Child Neurology, Supplement No. 13.) London, England, William Heinemann Medical Books, 1967, 96-102.

The anatomical features and clinical significance of findings in a case of myelomeningocele are discussed. It is shown that the ventricular system has a direct communication via the central canal to the top of the sac and that the fluid in the myelomeningocele sac has no communication with the central canal and the ventricular system. These findings are discussed in view of the current concepts of the pathogenetic relationship between myelomeningocele and hydrocephalus. It is concluded that: (1) myelomeningocele is not a blow-out of hydromyelia; (2) direct communication between the ventricular system and the amniotic fluid might be the factor responsible for the non-perforation of the rhombic roof; and (3) obstruction of the central canal due to various causes may elicit hydrocephalus. This leads to a suggestion as to how to diminish the severity of an accompanying hydrocephalus. (38 refs.) - (Author summary)

University of Göteborg
Göteborg, Sweden

183 Mathews, Ernest S., Sanchez, Gonzalo, & Ransohoff, Joseph. A preliminary report on a biological fluid transfer system for the treatment of hydrocephalus. In: Research into Hydrocephalus and Spina Bifida. (Developmental Medicine and Child Neurology, Supplement No. 13.) London, England, William Heinemann Medical Books, 1967, p. 103-107.

The treatment of 8 hydrocephalic infants with an externalized pump has led to the development of an implantable pump which is based on volume control rather than on intraventricular pressure. The average age of the infants was 3 months and some had previous shunts that were removed because of bacteremia. The pump was used for an average of 68 hours per infant. Volumetric removal rates were altered according to the fullness of the fontanel. It was found that the condition could be controlled by the removal of small amounts of fluid and that an extracorporeal means of rate control might be required. A pump 3.2 cm in diameter was made which is power driven with magnetic coupling across the scale to the implantable pump. It weighs 35 grams, can pump from 0 to 25 ml per hour and can be implanted in the bony calvarium. The purpose of this pump is to prevent shunt-dependency and arrest the hydrocephalus. Present shunting techniques may reduce the ventricular size undesirably and cause shunt dependence. Since transventricular absorption is important to "arrest," the maintenance of surface area is crucial. This can be obtained by volume control. The flow of fluid in this pump can be reversed to clear the tubing without surgical intervention. (14 refs.) - R. Froelich.

New York University
School of Medicine
550 First Avenue
New York, New York 10016

184 Hemmer, R. Complications relating to ventricular-venous shunts: A five-year study. In: Research into Hydrocephalus and Spina Bifida. (Developmental Medicine and Child Neurology, Supplement No. 13.) London, England, William Heinemann Medical Books, 1967, p. 108-112.

Post-operative complications in the drainage system arose in 62 percent of cases in a 5-year period, most of them in the first 6 months. In 7 cases the catheter slipped away from the connector and entered the venous system, and in 2 cases it broke at the juncture of the metal and the silicon. Other complications involved the growing of bone over the valve, calcification of the catheter, and penetration of blood or brain tissue into the valve. The resources of modern technology should be exploited in an attempt to improve the system. (2 refs.) - (Author summary)

The Neurosurgical Clinic
University of Freiburg
Freiburg, West Germany

185 Jones, E. R. Verrier, & Williams, J. Edmund. Urinary investigations in spina bifida cystica during the first month of life. In: Research into Hydrocephalus and Spina Bifida. (Developmental Medicine and Child Neurology, Supplement No. 13.) London, England, William Heinemann Medical Books, 1967, p. 113-118.

Evaluation of the urinary tract was undertaken in 21 cases of spina bifida cystica less than 1 month old. Significant changes which could lead to renal damage were detected in over three-quarters (16 out of 21) by excretion urography and cysto-urethrography. Both these radiological investigations are essential to reveal all abnormalities. Early recognition and correction of these is important if these children are to avoid renal complications. The importance of diagnosing urinary infections in these infants is stressed. Bag collection of urine

is unreliable and bladder aspiration is described and recommended. (17 refs.) - (Author summary)

The Hospital for Sick Children
Great Ormond Street
London W. C. 1, England

186 Howell, David G. The use of the colonic conduit in the treatment of urinary incontinence in congenital spinal palsy. In: Research into Hydrocephalus and Spina Bifida. (Developmental Medicine and Child Neurology, Supplement No. 13.) London, England, William Heinemann Medical Books, 1967, p. 119-124.

Colonic conduit is compared with ileal conduit as a means of urinary diversion and found to be a safer and more satisfactory procedure. In 63 cases treated by this method, there was no mortality, no case of intestinal obstruction, and a marked reduction in post-operative ileus and cases of dilatation and elongation of the ileal loop. The thicker musculature of the colon and its position in the paracolic gutter are partly responsible for this. The technique of operation is described, and brief case histories illustrate the use of the method. (1 ref.) - (Author summary)

Cardiff Royal Infirmary
Cardiff, Wales

187 Gubbay, S. S. Derangement of temperature control in hydrocephalus. In: Research into Hydrocephalus and Spina Bifida. (Developmental Medicine and Child Neurology, Supplement No. 13.) London, England, William Heinemann Medical Books, 1967, p. 125-132.

A 3¼-year-old child with severe obstructive hydrocephalus and associated hydranencephaly was observed to have a disorder of temperature regulation during the last few months of life. Necropsy examination revealed distortion of a gliotic hypothalamus by the enlarging ventricular system. An investigation of thermoregulation on 3 hydrocephalic children and 3 control patients disclosed 1 hydrocephalic child with a defective heat conservation mechanism who apparently did not have pituitary or thyroid insufficiency. It is postulated that thermodysregulation is a not-infrequent accompaniment of obstructive hydrocephalus and that it results from hypothalamic dysfunction secondary to the ischemic effects of pressure exerted principally by the enlarging third ventricle. (22 refs.)- (Author summary)

Princess Margaret Hospital
for Children
Perth, Western Australia

188 Talwalker, Vasant. Ventriculo-atrial shunt for hydrocephalus. British Medical Journal, 3(5559):244, 1967. (Letter)

The reduction of thrombus in a ventriculo-atrial shunt procedure for progressive hydrocephalus is possible by inserting a venous catheter in the internal jugular vein (IJV) without tying the vein. By placing a suture and a small nick in the wall of the IJV dissected above the sterno-clavicular joint, the catheter may be inserted in the opening with the loose ends of the suture tied over the nylon ring. The technique has been performed on 2 Ss who are active and well 6 months later. There was no leakage of blood. (No refs.) - A. Huffer.

No address

189 Luessenhop, Alfred J., Williams, Jonathan M., & Fulcher, O. Hugh. The current status of the management of hydrocephalus and its complications. Clinical Proceedings of Children's Hospital of the District of Columbia, 23(3):88-102, 1967.

Proper therapy of hydrocephalus requires the knowledge of the exact cause in each case, understanding of the physical and physiologic characteristics of cerebrospinal fluid, and appreciation of the natural history of each type without surgical intervention. Ventriculo-atrial shunting procedure has a mortality of 20-25 percent, but it doubles the number of educable children. Relief of spinal fluid pressure by lumbar puncture repeatedly during the first few days of life may allow the normal resorptive mechanisms to develop and avoid permanent shunt procedures. Infection, obstruction, and revision (required in 50 percent) are the major complications of shunts. Pharmacologic supplement of the shunt effect with acetazolamide improves results. Delay in treatment can result in irreversible brain damage. (23 refs.) - W. A. Hammill.

Children's Hospital
Washington, D. C.

190 Jones, Robert F. C. Long-term results in various treatments of hydrocephalus. Journal of Neurosurgery, 26(3):313-315, 1967.

One hundred and ten patients with progressive hydrocephalus not associated with myelomeningocele were treated by operation designed to bypass the block. Noncommunicating hydrocephalus was treated by ventriculocisternostomy for stenosis of the aqueduct or by craniotomy for congenital obstruction to the exits of the fourth ventricle. Control of hydrocephalus was achieved in 80 percent although some needed spinoperitoneal shunts in addition to achieve this. Communicating hydrocephalus was treated by spinoperitoneal shunts either to suprahepatic space or fallopian tube depending on the sex. Control of hydrocephalus was achieved in 90 percent. The revision rate is less than with ventriculovenous shunts. In view of the above long-term results, it is suggested that operations of this type be considered in suitable cases. (4 refs.) - (Source: Journal of the American Medical Association, 200(5):180, 1967)

Royal Alexandra Hospital
for Children
Sydney, Australia

191 Emery, John L. Kinking of the medulla in children with acute cerebral oedema and hydrocephalus and its relationship to the dentate ligaments. Journal of Neurology, Neurosurgery, and Psychiatry, 30(3):267-275, 1967.

Backward kinking of the medulla was found at necropsy in 3 children with rapid swelling of the brain, in 2 children with longstanding cerebral lesions, and in 2 children with meningomyelocele, hydrocephalus, and an Arnold-Chiari deformity with medullary spurs. The acute cerebral edema was caused by acute infection, infection with cerebral venous thrombosis, and trauma. The 2 children with longstanding lesions did not have clear pathology but 1 was an infant with cerebral edema at the time of birth and the other was 9 years of age with spastic diplegia since infancy. All patients showed an increase in size of the cerebral hemispheres which produced a caudal movement of the brain stem. The brain stem is relatively mobile but the spinal cord is firmly suspended by the dentate ligaments. This situation results in the kinking of the brain stem at its junction with the spinal cord. In the acute disorders, the kinking may be a major factor in causing death but in the children with meningomyelocele and hydrocephalus the kinking is part of a complex system of abnormalities. Kinking is probably more frequent than recognized because a special necropsy approach is often necessary to demonstrate it. (16 refs.) - R. Froelich.

Department of Pathology
Children's Hospital
Sheffield, England

192 Roebuck, D. J. Spina bifida. Rehabilitation in Australia, 4(2):5-6, 1966.

Most patients with spina bifida can live a useful and happy life if given adequate treatment. The recognition of spina bifida is usually easy except for spina bifida occulta. The 2 greatest dangers of spina bifida are infection and paralysis. The former occurs when the skin cover is incomplete and usually results in overwhelming meningitis and death. The paralysis in spina bifida is the result of fluid pressure on the nerves. Treatment can be divided into 3 phases: immediate treatment, the treatment of the growing child, and treatment of the adult. The infant recognized to have spina bifida should have a surgical repair within 48 hours of birth to prevent further nerve damage. The presence of hydrocephalus or its future development should be kept in mind. The treatment of the growing child consists of careful training, physiotherapy, leg calipers, vocational guidance, and adequate schooling. Achieving the normal milestones is important. Development of more symptoms during this period might indicate traction on the cord and a surgical procedure could prevent more damage. Maintenance of obtained skills during adult life may require further training or rehabilitation. (1 ref.) - R. Froelich.

Department of Health Services
Tasmania, Australia

193 Andrews, Leslie G. Spina bifida cystica: A follow-up survey. Canadian Medical Association Journal, 97(6):280-285, 1967.

A follow-up study of 61 rehabilitation-center patients between the ages of 1 and 34 years with spina bifida cystica or spina bifida surveyed continence, ambulation, surgery, daily living activities, education, vocation, and cause of death. Five patients with spina bifida were between 5 and 25 years of age and all had fecal incontinence. All were ambulatory and were functioning adequately in school or occupation. Fifty-six patients had spina bifida cystica, 43 of which were over 4 years of age. Twenty-eight (65 percent) of

these had fecal continence. Females became continent and at a much earlier age than males. Seventeen (40 percent) were confined to a wheelchair, and 12 of 23 who were fully ambulatory required braces. Thirty-nine patients were over 6 years of age. Ninety percent could dress and undress alone. Eighteen were attending school in the expected grade for their age and 16 were attending regular classes in local schools. Thirty-one of the 56 patients with spina bifida had hydrocephalus and 5 of these died. Thirty-six had surgery on the spinal mass and 9 had ventriculocaval shunts. In patients over 6 years of age only 1 male and 10 females had urinary continence. The remainder either had a catheter, condom, or ileal loop. This study confirms the justification of concerted effort with these patients. (5 refs.) - R. Froelich.

G. F. Strong Rehabilitation Centre
900 West 27th Avenue
Vancouver 9, B. C., Canada

194 Woodard, James Carroll, & Newberne, Paul M. The pathogenesis of hydrocephalus in newborn rats deficient in vitamin B_{12}. Journal of Embryology and Experimental Morphology, 17(1):117-187, 1967.

The hydrocephalus that is caused in fetal rats by maternal deficiency of vitamin B_{12} was not influenced by addition of X-methyl folic acid or choline chloride added to the maternal diet. Female rats were raised from birth on a basal diet deficient in vitamin B_{12}. At adulthood the rats were divided into 4 groups and fed either a basal diet, a basal diet with 0.1 percent choline chloride, a basal diet with choline chloride and X-methyl folic acid (10 mg/kg), or a basal diet with choline chloride and 50 mg of vitamin B_{12}. After 3 weeks on these diets they were mated. Fetuses were studied at various gestational ages by cesarean section or allowed to develop to term. The serum and urine sodium of the offspring was higher in newborns of vitamin B_{12} deficient mothers. Serum protein was higher in newborn animals whose mothers received vitamin B_{12}. The hydrocephalus that occurred in the 3 groups of maternal vitamin B_{12} deficiency all had some abnormality of the cerebral aqueduct and appeared similar in all 3 groups. Hydrocephalus was demonstrated by the eighteenth day of gestation. Aqueductal stenosis was a routine finding in vitamin B_{12} deficient animals. The subcommissural organ and columnar cells of the roof of the aqueduct also showed abnormalities. There were no differences in serum potassium, urine specific gravity, packed cell volume of blood, or percentage of albumin or alpha or beta globulin. (15 refs.) - R. Froelich.

School of Medicine
University of Florida
Gainsville, Florida

195 McKibbin, B., & Porter, R. W. The incidence of vitamin-C deficiency in meningomyelocele. Developmental Medicine and Child Neurology, 9(3):338-344, 1967.

Ss with meningomyelocele have a high incidence of vitamin-C deficiency. Twenty-five Ss with meningomyelocele were compared with 16 Ss with orthopedic problems, but without neurologic disease. Seventy-six percent of Ss with meningomyelocele had ascorbate deficiency as determined by a vitamin-C saturation test (10 mg/Kg of vitamin-C by mouth with urinary vitamin-C measured from the fourth to sixth hour). The 16 controls were fully saturated. The radiologic picture of fractures in Ss with meningomyelocele is suggestive of scurvy. None of the Ss had clinical evidence of vitamin-C deficiency and all converted to normal after a few days of replacement therapy. The stress of repeated operative procedures in Ss with meningomyelocele may deplete body stores of vitamin-C. All Ss with meningomyelocele should be on replacement vitamin-C therapy. (7 refs.) - W. A. Hammill.

King Edward VII Orthopaedic Hospital
Sheffield, England

Unknown or psychogenic cause with reaction manifest

196 Szliwowski, H. B., Henry, J., & Pelc, S. Le syndrome de Sjögren-Larsson. (The Sjögren-Larsson syndrome.) Acta Paediatrica Belgica, 21(2):125-132, 1967.

A reported case of Sjögren-Larsson syndrome associated with ichthyosis, EMR, and spastic quadriplegia also was accompanied by congenital nystagmus and tremor. The patient was examined 3 times during childhood. Termann-Merrill tests showed progressive deficit between CA (49 months) and MA (42 months), IQ was 77. Development of language and social reactions lagged by 10 months on the Gesell Developmental Scale. A review of the literature reveals descriptions of similar symptoms by multiple authors but Sjörgren and Larsson

receive the credit for combining these symptoms into the syndrome bearing their name. Karyotypes and urinary amino acid screenings of this and other patients have been normal. The disease occurs sporadically usually without associated symptoms in parents of those affected. Higher mortality than in the normal population accompanies this syndrome at birth and throughout life. (15 refs.) - W. Asher

Service de Pédiatrie
Université libre de Bruxelles
Brussels, Belgium

197 Hoefnagel, D., Costello, P. J., & Hatoum, Khalil. Prader-Willi Syndrome. Journal of Mental Deficiency Research, 11(2):1-11, 1967.

Four males with the Prader-Willi syndrome demonstrated MR, shortness of stature, marked obesity, and hypogonadism. About 41 similar cases have been reported with a sex ratio of 31:10 in favor of males. The most constant features of the syndrome include: diminished or absent intrauterine movements during the prenatal period; marked hypotonia, diminished or absent spontaneous activity, weak or absent cry, and poor swallowing and sucking during the newborn period; and obesity, MR and slow improvement of hypotonia, swallowing and activity during the infancy period. Other characteristics include small head circumference, infantile genitalia, small hands and feet, and delayed puberty. Adult Ss also may develop diabetes mellitus. The ages of the 4 boys were 3, 4, 14½, and 19½. The differential diagnosis includes the various disorders that are accompanied by flaccidity of the skeletal musculature. No definite cause has been found but one of several theories is an autosomal recessive inheritance. The obesity was the result of hyperphagia, which can be of severe degree. The MR varies from severe to dull normal with a characteristic cheerful and affable personality. (11 refs.) - R. Froelich.

Dartmouth Medical School
Hanover, New Hampshire

198 Juul, J., & Dupont, Annalise. Prader-Willi syndrome. Journal of Mental Deficiency Research, 11(2):12-22, 1967.

A 43-year-old male with the Prader-Willi syndrome is one of the oldest hitherto observed cases. The patient had asphyxia at birth and was retarded in mental development. At the age of 5 he was found to have obesity, MR, thyroid deficiency, dystrophic scrotum and absent testes, acrocyanosis, and retarded bone age. He was treated with thyroid and a reducing diet with no consistent improvement. He developed epileptiform seizures and had only slight sexual development. He was institutionalized at age 7. The IQ has varied between 71 and 55. At age 27 he developed diabetes mellitus. His state at age 43 is little changed. Cytogenetic, and laboratory studies were essentially normal except for glucose changes consistent with diabetes. Muscle strength was 20-50 percent of normal and x-rays revealed brachycephaly. Hormone analysis showed an increased hypophyseal gonadotropin, a decreased plasma testosterone and possibly a decreased androsterone level. Etiology of this disorder is unknown. Although only 46 cases have been published in the literature, it is probably not as uncommon as once thought. (21 refs.) - R. Froelich.

The Centre for the Care of
Mentally Retarded
Brejning, Denmark

199 Van Laere, J. Paralysie bulbo-pontine chronique progressive familiale avec surdité. Un cas de syndrome de Klippel-Trenaunay dans la même fratrie. Problèmes diagnostiques et génétiques. (Chronic progressive familial bulbo-pontine paralysis with deafness. A case of Klippel-Trenaunay syndrome in the same family. Diagnostic and genetic problems.) Revue Neurologique, 115(2): 289-295, 1966.

A degenerative inherited disease with marked penetrance is characterized by progressive bilateral deafness, atrophy and fibrillation of the tongue and pharynx, with evidence of peripheral nerve degeneration as shown by electromyography. Out of 8 girls and 2 boys (10 siblings), 4 girls were affected with the syndrome described with each child in succession being more severely affected. Another sibling had Klippel-Trenaunay syndrome marked by a large strawberry nevas extending over the majority of her right leg and accompanied by varices and enlargement of this extremity since birth. Another sibling died 10 days after birth with a large spina bifida, another was SMR. Only 1 sister and 2 brothers were unaffected; neither parent was affected. Although most authors continue to separate abiotrophies into hereditary degenerative diseases, congenital malformations, and inherited developmental dysplasias, here is an obvious case of all three types in 1 family. The syndrome affecting the 4 sisters most nearly resembles progressive familial bulbar

paralysis of Londe which is the infant form of amytrophic lateral sclerosis. (No refs.) - W. Asher.

Courtrai, Belgium

200 Meadow, S. R. Congenital nephrotic syndrome. Developmental Medicine and Child Neurology, 9(4):500, 1967.

The congenital nephrotic syndrome is an uncommon, uniformly fatal disease that becomes manifest in the first 2 months of life. Genetic studies suggest autosomal recessive inheritance. Clinical features are edema, albuminuria, elevated alpha-2 lipoprotein and cholesterol in blood, low set ears, snub noses, and talipes. The infants are often premature and small for the gestational age, and have large (more than 25 percent of birth weight) placentas. Histologic findings are inconstant, but include damage to both glomeruli and proximal tubules. Treatment with steroids or immuno-suppressive agents is of no value and the Ss usually succumb within the first year of infection. (4 refs.) - W. A. Hammill.

Department of Paediatrics
Guy's Hospital
London, S.E.1, England

201 Gerber, Nicholas. Congenital atresia of the subclavian artery. American Journal of Diseases of Children, 113(6):709-713, 1967.

An 8-year-old MR boy was found to have subclavian steal syndrome caused by congenital atresia of the left subclavian artery and which was possibly related to the MR. He came to the attention of the physician because of poor school performance and excessive shyness. The past medical history and family history were relatively unremarkable and there were no cardiac symptoms. His face had an elfin appearance and he had a speech impediment. Blood pressure could not be recorded on the left arm. A thoracic aortogram showed an atresia of the first part of the subclavian artery and retrograde circulation to the left arm from the vertebro-basilar system. He had an increased serum calcium and a pulmonary arteriogram showed mild pulmonary stenosis. An electroencephalogram was normal. His best IQ score was 64 and tasks requiring vision and continuous attention were done poorly. Chronic cerebral hypoxemia may have resulted in MR since adults with arteriosclerotic subclavian steal syndrome have evidenced mental deterioration. (6 refs.) - R. Froelich.

Johns Hopkins Hospital
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202 Kolin, Irving S. Nemaline myopathy. American Journal of Diseases of Children, 114(1):95-100, 1967.

A 9½-month-old boy was the first reported case of nemaline myopathy with severe involvement of the muscles of deglutition and respiration and was the first reported fatality. The infant was first examined at 3 months of age and found to be thin, lethargic, severely hypotonic, and weak with absent reflexes. His feeding had been poor from birth and he had been cyanotic the first day of life. An electromyogram (EMG) showed generalized myopathy with impairment of all extremities. A quadriceps muscle biopsy was pathognomonic of nemaline myopathy. Although his development quotient was 76 at 5½ months of age it was felt that the severe muscle weakness and retarded development were concealing a normal intelligence. He remained unchanged clinically except for the development of normal babbling and some motor ability. At 9½ months of age he developed pneumonia from aspiration of oral secretions and died. The family evaluation was not helpful in determining the genetic etiology, however, the mother did have a nonspecific EMG abnormality. Patients with symmetrical muscle weakness should be suspected of having this disorder. (9 refs.) - R. Froelich.

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203 Saba, S., Parry, J., & Lôo, H. A propos d'un cas de dégénérescence tapéto-rétinienne associée à des troubles mentaux. (A case of tapeto-retinal degeneration associated with mental disorder.) Annales Medico Psychologiques. 125(1):106-111, 1967.

Tapeto-retinal degeneration, existing in 2 forms (congenital and infantile) and transmitted by a recessive gene, has become subject to investigation with the introduction of the electroretinogram. Typical symptoms are an abnormal EEG, epileptic seizures, cerebral anomalies, diverse neurological disturbances, psychomotor retardation, and profound MR. One case is presented--a female (CA, 9 years; MA, 6) whose development and

heredity appeared normal until seizures began at 8 years of age; these were followed by tapeto-retinal degeneration and the S's placement in an institution for blind children. (18 refs.) - C. A. Pepper

Hôpital Psychiatrique
La Charité-sur-Loire, France

204 Brett, E. M., & Berry, C. L. Value of rectal biopsy in paediatric neurology: Report of 165 biopsies. British Medical Journal, 3(5562):400-403, 1967.

The utilization of rectal biopsy as a diagnostic test for progressive degenerative brain disease showed histologic abnormalities in 20 percent of 165 cases. Human Ss with symptoms of neurological degenerative disease during the period 1962-66 revealed 19 positive cases of neurolipidosis and 11 of metachromatic leucodystrophy. Clinical features of these patients included history of dementia, regression of psychomotor skills, convulsions, macular changes, and ataxia. Ancillary laboratory investigations seemed helpful on microscopic urinalysis of those patients suffering from metachromatic leucodystrophy. Biopsies taken from 131 patients showing no abnormality proved to have a predominance of very early MR and amentia in contrast to those patients with positive biopsies. On review, 14 of the non-diagnostic biopsies showed non-specific degenerative changes in the myenteric plexus. Rectal biopsy proves to be of particular value in the diagnosis of neurolipidosis and metachromatic leucodystrophy. Where adequate laboratory facilities exist, biopsy may become unnecessary in metachromatic leucodystrophy. Pneumoencephalography was of no value for selecting cases. (18 refs.) - W. Asher.

National Hospital for Nervous Diseases
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205 Watanabe, Itaru, & Muller, Jans. Cavitating "diffuse sclerosis." Journal of Neuropathology and Experimental Neurology, 26(3):437-455, 1967.

Widespread cerebral white matter disease consisting of extensive cavitation is reported in 2 patients, 1 of which was a 14-year-old male who had developed MR and personality changes 1 year before death. His first sign was forgetfulness and a decrease in school grades. Following this, his behavior became inconsistent and unreliable and his peer relationships degenerated. He suddenly became semicomatose and died 84 days later. Autopsy revealed cavitation from the anterior horn to the junction of the parietal and occipital lobe. Demyelination extended well beyond this area and was orderly with the appropriate glial and mesenchymal response. The other patient was a 45-year-old male who developed mental deterioration for the last 4 years of his life. The astrocytic, microglial, and mesenchymal response was not as marked. The first case was labeled Schilder's cerebral sclerosis of the sudanophilic type. The diagnosis of the second case was debatable between diffuse oligodendrogliomatosis or leukodystrophy with oligodendroglial insufficiency and proliferation. Although these diseases are rare, diffuse cerebral white matter disease should be considered when there is progressive mental and physical deterioration. (38 refs.) - R. Froelich.

Section of Neuropathology
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206 Gonatas, Nicholas K., Martin, Joseph, & Evangelista, Irene. The osmiophilic particles of astrocytes. Journal of Neuropathology and Experimental Neurology, 26(3): 369-376, 1967.

Small intracytoplasmic osmiophilic particles were found in reactive astrocytes from a case of subacute sclerosing leukoencephalitis, a case of Tay-Sachs disease, a case of metachromatic leu.odystrophy, a case of diffuse cerebral degeneration of obscure nature, and a case of malignant astrocytoma. The particles were circular with a total diameter of 900 to 1,300 angstrom units (Å). The osmiophilic core was in the center with a diameter of 600 to 830 Å and was surrounded by a distinct clear halo and a single membrane. The cells containing these particles did not show any signs of necrosis or poor fixation. The particles were similar to those reported in cases of subacute sclerosing leukoencephalitis except they were slightly larger in the cases in this study. The 3 possibilities for the etiology of these particles are: virus, absorption of lipid droplets, or secretory granules. All patients were children except for the 63-year-old man with a malignant astrocytoma. All cases demonstrated some degree of intellectual or mental retardation but this was secondary to severe neurological deficits. The 11-year-old girl with subacute

sclerosing leukoencephalitis presented initially with a personality change requiring psychiatric care. (31 refs.) - R. Froelich.

Department of Neuropathology
University of Pennsylvania
School of Medicine
Philadelphia, Pennsylvania

207 Kolar, O., Obrucnik, M., Behounkova, L., Musil, J., & Penickova, V. Thymectomy in subacute sclerosing leucoencephalitis. British Medical Journal, 3(5556):22-24, 1967.

A 13-year-old boy with subacute sclerosing leucoencephalitis (SSLE) and thymic hyperplasia showed considerable clinical improvement after a thymectomy. The patient presented intellectual deterioration, periodic choreiform hyperkineses, deteriorating vision, and ultimately, epileptic seizures. His personality deteriorated to a hebephrenic syndrome. The cerebrospinal fluid complement fixation reaction with standardized antigen from a patient with SSLE was strongly positive. Radiological studies showed an enlarged spleen, liver, and thymus. Immunoelectrophoresis of a brain biopsy specimen showed increased gamma-G-globulins. Within 2 weeks of the thymectomy the psychiatric symptoms improved and have not returned. Extrapyrimidal signs decreased. Seventeen months after thymectomy he is free of seizures, hyperkinesias, and pyramidal signs but his MR has not improved. Cerebrospinal fluid gamma-G-globulins decreased. Of 9 patients with SSLE, 3 have been found to have enlarged thymus glands. What relationship the thymus gland has with SSLE and why thymectomy was associated with improvement of neuropsychiatric symptoms is uncertain. (11 refs.) - R. Froelich.

Department of Pathology and Neurology
Indiana University School
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Bloomington, Indiana

208 Glowacki, J., Guazzi, G. C., & *Van Bogaert, L. Pseudo-tumoural presentation of certain cases of subacute sclerosing leucoencephalitis. Journal of the Neurological Sciences, 4(2):199-215, 1967.

Eleven cases of subacute sclerosing leucoencephalitis (SSLE) presenting as intracranial tumors are described. Some cases were treated with neurosurgery with fatal results. Their ages ranged from 5 to 12½ years and death when reported occurred from almost immediately after diagnosis to 2½ years after onset. Four children died between 3 and 4 months after onset. All presented intracranial hypertension, papilledema, or both. Two of 3 treated by surgery died within 3 months of surgery. Presenting problems consisted of behavioral changes, MR, epilepsy, headaches, falling, diminution of visual acuity, speech disturbance, visual hallucinations, confusion, or vomiting. A progression of the papilledema to optic atrophy was found in some cases. On necropsy the brains were heavy (cerebral edema) and had small ventricles. Convolutions appeared flattened. Microscopic examination revealed focal necrosis of the white matter, areas of myelin pallor, cerebral edema, and edematous necrosis. The "pseudotumoral" presentation of SSLE may precipitate unnecessary and dangerous surgery unless it can be distinguished from true tumors. (46 refs.) - R. Froelich.

*Laboratory of Neuropathology
Institut Bunge
Berchem-Antwerp, Belgium

209 Allen, Norman, & De Veyra, Ernesto. Microchemical and histochemical observations in a case of Krabbe's leukodystrophy. Journal of Neuropathology and Experimental Neurology, 26(3):456-474, 1967.

A 21-month-old male infant dying with Krabbe's leukodystrophy was found to have consistently increased beta-glucuronidase activity in the white matter and a number of other uncommon histopathological and biochemical findings. The infant appeared normal until 4 months of age and then became increasingly impaired neurologically. Cerebrospinal fluid beta-glucuronidase activity was increased. Within 2 hours after death the brain was removed for chemical study. Histopathological findings included cerebellar granular atrophy, focal cortical laminar atrophy, liquefaction in large white matter tracts, and some peripheral nerve abnormalities. These findings are probably the result of the unusually advanced state of the disease process. The severely gliotic white matter contained increased amounts of nitrogen and protein. Acid phosphatase and beta-glucuronidase were found to be from the globoid cell. Both of these enzymes had normal distributions within the cortex. Cytochrome oxidase alterations were partly related to the isolated state of the cortex. There was qualitative histochemical evidence for the presence of a mucopolysaccharide within globoid cells. (52 refs.) - R. Froelich.

The Ohio State University Hospitals
Division of Neurology
410 West Tenth Avenue
Columbus, Ohio 43210

210 Gonatas, Nicholas K., Evangelista, Irene, & Walsh, Gregory O. Axonic and synaptic changes in a case of psychomotor retardation: An electron microscopic study. Journal of Neuropathology and Experimental Neurology, 26(2):179-199, 1967.

Electron microscopic studies revealed numerous enlarged presynaptic terminals filled with vesiculo-tubular structures and absent axonal microtubules in a 30-month-old Negro male S with psychomotor retardation and seizures. Similar changes have been seen near the senile plaques in Ss with Alzheimer's disease. No other anatomic or histologic abnormality was demonstrated in this S. A metabolic defect at this location could interfere with intercellular communication and cause seizures. The absence of normal axonal microtubules in this case might interfere with axonal cytoplasmic flow. (62 refs.) - W. A. Hammill.

Department of Pathology
University of Pennsylvania
School of Medicine
Philadelphia, Pennsylvania

211 Katz, Charles M., & *Taylor, Paul M. The incidence of low birthweight in children with severe mental retardation. American Journal of Diseases of Children, 114(1):80-87, 1967.

The incidence of low birthweight among 573 institutionalized severe MR children was very high and could not be accounted for solely by socioeconomic factors. IQ was tested in 325 patients with 84 percent scoring below 51. The cause of MR was unknown for 369 patients (63 percent) who were termed the undifferentiated group. Statistics for the general population were obtained from state records. The incidence of birthweight below 5.5 lb was 25 percent for the total MR population and the undifferentiated group, as compared to 7 percent for the general population. The incidence of birthweight below 3.5 lb was 6 percent for the total MR population and 8 percent for the undifferentiated group compared to 1 percent for the general population. There were no prematures found in the small group of children retarded by paranatal trauma. Although all the socioeconomic factors were not available to this study, a subgroup of parents with known legitimacy, age, education, and of the white race were studied. The incidence of prematurity in this group was lower but not to a significant degree. This study agrees with other studies that showed an association between prematurity and MR. (15 refs.) - R. Froelich.

*Magee-Women's Hospital
Forbes and Halket Streets
Pittsburgh, Pennsylvania 15213

212 Dignam, William J. Fetal survival with premature delivery in complications of pregnancy. American Journal of Obstetrics and Gynecology, 98(5):587-592; discussion, 592-593, 1967.

Evaluation of data from 10,000 consecutive deliveries at the UCLA Medical Center indicates that complicated pregnancies should not be interrupted before the thirty-second week of gestation because of the high fetal mortality. Complications considered were ruptured membranes (877) with 3 percent fetal loss, toxemia (577) with 4.5 percent fetal loss, renal disease (389) with 3 percent fetal loss, Rh-negative sensitization (117) with 9 percent fetal loss, premature separation of the placenta (92) with 12 percent fetal loss, diabetes (59) with 7 percent fetal loss, and hypertension (55) with 5.5 percent fetal loss. The fetal loss of all others was 1 percent. The high fetal loss in these complications cannot necessarily be blamed on the management which includes interruption of pregnancy. The prognosis for survival of an infant born before the thirty-second week in an otherwise uncomplicated pregnancy is 50 percent. Fetal loss in complicated pregnancies decreases as the duration of pregnancy increases from 28 weeks to 41 weeks. The data do not permit meaningful conclusions about deciding when complicated pregnancies should be interrupted or even if they should be interrupted at all. (1 ref.) - R. Froelich.

Department of Obstetrics and Gynecology
UCLA School of Medicine
Los Angeles, California

213 Kaplitz, Sherman E. The use of perphenazine syrup in the severely disturbed mentally retarded child. Illinois Medical Journal, 130(6):785-787, 1966.

An evaluation of the use of perphenazine in 28 brain-damaged children from the outpatient clinic of the Dr. Julian D. Levinson Research Foundation for Mentally Retarded Children (Chicago). Perphenazine syrup (Trilafon) was administered in doses ranging from 3 mg to 12 mg daily. Results indicated 18 patients (64 percent) had improved behavior, with 11 (61

percent) showing marked improvement, 6 (33 percent) moderate, and 1 (6 percent) slight. Of 10 patients showing no improvement, 3 became more agitated and hyperactive (ataxia was noted in 1) and another was reported as "meaner." No significant toxic effect was observed clinically. Dr. Kaplitz concludes that drug therapy definitely has a role in the treatment of severely disturbed MR children, with or without brain damage. (20 refs.) - (Source: Rehabilitation Literature, 28(3):83, 1967)

6 North Michigan Boulevard
Chicago, Illinois 60602

214 Coda, Evis J. Outpatient psychiatric treatment and challenges in mentally retarded children. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 8 p. Mimeographed.

The inclusion of psychiatric outpatient services for MR children at the Kennedy Child Study Center, St. John's Hospital, Santa Monica, California has had a number of valuable effects. In addition to the psychotherapeutic help given to children, parents, teachers, and physicians, the program has added to staff diagnostic and prognostic skills and to the development of therapeutic and counseling skills. The frequency of requests for repeated physical diagnoses has been reduced. The services offered by the Center include individual psychotherapy, group therapy, family therapy, a guidance program, activity-discussion group therapy, and a special nursery school program. These services have been helpful with MR children who have severe acting-out disturbances, schizophrenic or autistic traits, anxiety, shyness, constriction of personality, low self-esteem, separation anxiety, and symbiotic mother-child relationships. (No refs.) - J. K. Wyatt.

Kennedy Child Study Center
St. John's Hospital
Santa Monica, California

CONVULSIVE DISORDERS

215 Wajsbort, J., Haral, N., & Alfandary, I. A study of the epidemiology of chronic epilepsy in northern Israel. Epilepsia, 8(1):105-116, 1967.

Significant ethnic and cultural factors were found to influence the incidence of epilepsy in a study of 735 patients with chronic epilepsy living in northern Israel. The patients were selected from 316,017 members of a health insurance plan. Of the 735 in the neurological clinic for chronic epilepsy, 322 were of European-American (EA) origin, 264 were native-born Israelis, and 149 were of Afro-Asian (AA) origin. The incidence of epilepsy per thousand was 3.06 for the EAs, 2.49 for the native-born, 1.31 for the AAs, and 2.32 average for the total group. The incidence was greater among men for all age groups and regions of origin but was more pronounced in the AA group. Grand mal epilepsy constituted the majority of epilepsy types in all groups and also was greatest among males. The etiology of epilepsy was idiopathic in 30.1 percent, accidental trauma in 18.6 percent, and natal trauma in 14.7 percent of the cases. The average age of patients was much higher in the EA group. Etiology was more commonly head injury and vascular factors among the EAs, natal trauma among the native-born, and hereditary factors for the AAs. These findings appear to be specific for the atypical situations found in Israel. The war experiences of EA immigrants possibly play an important role in both trauma and premature arteriosclerosis. (15 refs.) - R. Froelich.

Neurology Department
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Haifa, Israel

216 Völzke, E., Doose, H., & Stephan, E. The treatment of infantile spasms and hypsarrhythmia with Mogadon. Epilepsia, 8(2):64-70, 1967.

Of 24 children between the ages of 1 month and 1½ years with infantile spasms treated with Mogadon, 13 were controlled and demonstrated EEG improvement. Infantile spasms were preceded by neonatal seizures in 3, grand mal seizures in 5, and focal seizures in 3. In 19 cases infantile spasms began between the fourth and eighth month. Three cases had a family history of seizures and 13 had an abnormal fetal or perinatal history. Eighteen showed definite mental and motor impairment, and 22 had hypsarrhythmia. Five cases received no benefit from Mogadon and 6 had temporary improvement. Most of those who improved did so within 1 week. Dosage was usually 0.6 - 1.0 mg/kg daily. Fourteen patients had side-effects, the most serious of which was hypersecretion in the respiratory tract (7 cases). Aspiration occurred in 1 case. Other side-effects such as drowsiness (6), difficulty in drinking and swallowing (4), insomnia (2), and grand mal seizures (4)

were either minor or easily manageable. Mogadon is an effective medication for infantile seizures and is a significant advance in this area. (24 refs.) - R. Froelich.

University Pediatric Hospital
Keil, Germany

217 Parsonage, Maurice J., & Norris, John W. Use of diazepam in treatment of severe convulsive status epilepticus. British Medical Journal, 3(5557):85-88, 1967.

Parenteral diazepam controlled severe convulsive status epilepticus in 7 of 9 cases (4 males and 5 females; CAs, 11 to 53 years). Six patients had a frontal lobe source for their seizures and several had had previous episodes of status epilepticus. Five had MR and 1 had a personality change. Five had onset of epilepsy at birth or infancy. The precipitating factor in the acute episode of status epilepticus was related to a withdrawal or change in anticonvulsant medication in 4 patients. Immediate control of seizures occurred following intramuscular or intravenous diazepam. Control in 2 was only temporary. Intravenous infusion was found to prevent recurrence and be the most effective method. The 2 patients not responding did not respond to any type of treatment and eventually died. The cause of death was a vascular occlusion in one and severe brain damage in the other. The only side-effects were sedation and transient semi-coma. Three cases had abnormal liver function which was related to other causes. Respiratory depression was not a problem. One hundred mg of diazepam in 500 mg of saline was the dosage found most useful. Diazepam, if given intravenously in high enough doses, is a very useful and effective drug for status epilepticus. (19 refs.) - R. Froelich.

General Infirmary at Leeds
Leeds 1, England

218 Kopeloff, Lenore M., & Chusid, Joseph G. Indoklon and Metrazol convulsions in epileptic and control monkeys. International Journal of Neuropsychiatry, 3(2):174-178, 1967.

The convulsant thresholds for Metrazol (2 percent intravenously (I.V.) and 10 percent intramuscularly (I.M.)) and Indoklon (2 percent I.V.) were lower in epileptic monkeys than in normal unoperated controls. Half of a group of brain-operated non-epileptic monkeys had lower convulsant thresholds to Metrazol 2 percent I.V. but not to Metrazol 10 percent I.M. or Indoklon 2 percent I.V. A total of 17 monkeys were used, 4 of which were made chronic epileptics by injection of alumina cream into the sensorimotor cerebral cortex. Generalized seizures occurred within 3 to 15 minutes in non-epileptic monkeys and 2 to 4 minutes in epileptic monkeys when 2 percent Indoklon I.V. was given. Ten percent Indoklon I.V. caused convulsions within 1 minute in all animals. Metrazol 2 percent I.V. caused focal contralateral seizures in 0.5 to 2 minutes in epileptic monkeys and generalized seizures in 1.5 to 6 minutes in operated or unoperated controls. Metrazol 10 percent I.M. caused motor seizures within 3 to 10 minutes in the epileptic monkeys. Intravenous Indoklon and Metrazol produced similar electroencephalographic patterns. Equal doses of less concentrated solutions given I.V. were less likely to produce convulsions and I.M. Metrazol was more effective in distinguishing epileptics from non-epileptics. Indoklon and Metrazol are potent convulsant agents that suggest further trial in experimental and clinical studies. (16 refs.) - R. Froelich.

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GENETIC DISORDERS

219 Francois, J. Autosomal chromosome aberrations in ophthalmology. Journal of the Neurological Sciences, 4(3):511-558, 1967.

The eye is commonly involved in chromosomal abnormalities. Ocular lesions include cataracts, myopia, retinal degeneration or dysplasia, coloboma, microphthalmia, anophthalmia, and persistence of the primary vitreous. These lesions are not specific for any particular chromosomal defect, but occur with many types of aberrations. Presence of 1 of these optic anomalies should indicate cytogenetic studies in the affected S as well as his relatives. Careful analysis of cytogenetic data will avoid creation of new syndromes of uncertain definition. Tissue cultures for karyotyping may be necessary for proper evaluation. (284 refs.) - W. A. Hammill.

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220 Steinberg, Arthur G., & Bearn, Alexander G., eds. Progress in Medical Genetics, Volume V. New York, New York, Grune & Stratton, 1967, 151 p. $9.00.

Five selective reviews representing various medical genetic subjects of interest to the clinician and the basic scientist are presented in the fifth volume of this series. The "nature versus nurture" debate is no longer correct in the light of experimental evidence and is more correctly termed "nature and nurture." There is definite evidence that prenatal influences affect the fetus. The clinical picture of thalassemia can be caused by a number of distinct inherited defects in globin production. Thalassemia is probably a hemoglobinopathy with the many variants of the disease representing defective synthesis of different peptide chains. The porphyrias represent a complex genetic problem with a number of clinical, biochemical, or hereditary patterns included under this heading. Among the liver diseases associated with jaundice that include MR are galactosemia and Wilson's disease. Among the myopathies discussed, Duchenne muscular dystrophy is X-linked. Of 109 children with amyotonia congenita, 8 had a mental defect. Current genetic knowledge is presented for each disorder. (421 refs.) - R. Froelich.

CONTENTS: Nature and Nurture; The Thalassemias; The Porphyrias: A Genetic Problem; Genetic Aspects of Liver Disease Associated with Jaundice; The Genetics of Muscular Dystrophy.

221 National Foundation--March of Dimes. Chicago Conference: Standardization in Human Cytogenetics. (Birth Defects: Original Article Series, 2(2).) New York, The National Foundation, 1966, 21 p.

A revised system of standard nomenclature for descriptions of normal and abnormal chromosomes was developed at the Third International Congress of Human Genetics in Chicago in September, 1966. Uniformity in terminology will enhance communication among workers in genetics. The system is kept flexible so that new knowledge can be readily incorporated. Suggestions for collection and reporting of useful data other than cytogenetic studies in a standardized way will further aid exchange of information. A pilot study of a central registry for genetic information is described. (15 refs.) - W. A. Hammill.

222 Massimo, L., Borrone, C., Vianello, M. G., Marchi, A. G., Dagna-Bricarelli, F., Cerruti-Mainardi, P., & Melevendi, C. Rapports entre anomalies chromosomiques et altérations des réactions immunitaires. (Relations between chromosomal anomalies and alterations of immunologic reactions.) Helvetica Paediatrica Acta, 22(2):193-200, 1967.

Immunologic alterations may serve as an index of predisposition to chromosomal anomalies. Thirty-two families totaling 171 human Ss were studied to determine whether all cellular systems were involved in the immunologic abnormalities seen in patients with chromosomal aberrations which included Down's syndrome, Turner's syndrome, and various translocations and mosaicisms. Paper electrophoresis, serum immunoelectrophoresis, rheumatoid factor, anti-nuclear factor (LE tests), and antibody to liver, kidney, and thyroid tissue were determined. Statistically significant elevations in immunoglobulins and antibody titers to liver and kidney tissue were found. This data supports the hypothesis of a connection between immunologic alterations and chromosomal aberrations. (14 refs.) - W. Asher.

No address

223 Hall, B., & Dahlquist, A. A sign of chromosomal aberration? Lancet, 7504(1):1388-1389, 1967. (Letter)

Galactose-phosphate uridyl transferase (GPUT) activity was assayed for (1) 5 randomly selected normal Ss between 6 and 12 years; (2) 10 infants; (3) 55 MR institutionalized adults without signs of chromosomal aberrations or galactosemia; and (4) 8 patients with various chromosomal abnormalities. All except 1 with autosome aberrations had high GPUT levels which supports the hypothesis of non-specific action of chromosomal aberrations. (9 refs.) - J. Snodgrass.

Institute of Genetics
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224 Fialkow, Philip J. Autoantibodies and chromosomal aberrations. Lancet, 1(7499):1106, 1967. (Letter)

Thyroid antibodies were found in 69 of 242 mothers of patients with Down's syndrome compared with 39 of 242 age-matched controls. An increased frequency of thyroid antibodies was found in mothers who had their affected

children before the age of 35. In 39 patients with gonadal dysgenesis, an increased frequency of thyroid antibodies was found in patients with an XO karyotype and an even higher frequency in those with mosaicism or an isochromosome-X. The data seem to support the hypothesis that a factor related to thyroid antibodies in a parent predisposes the offspring to chromosomal aberrations. (9 refs.) - J. Snodgrass.

Department of Medicine
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225 Ockey, C. H., Feldman, G. V., Macaulay, M. E., & Delaney, M. J. A large deletion of the long arm of chromosome No. 4 in a child with limb abnormalities. Archives of Disease in Childhood, 42(224): 428-434, 1967.

Partial monosomy (deletion of 23 percent of the long arm of chromosome number 4) was associated with multiple somatic anomalies in a child who died at age 3½ months. Mongoloid facies, low set ears, single left forearm bone and digit, dislocated hip, overriding fifth toes, and cardiac defects were present. Death was from intractable diarrhea and terminal pneumonia. Chromosome identification was established by quantitative morphology and autoradiography. The deletion contained primarily late labeling DNA, hence was genetically less active and allowed survival. (25 refs.) - W. A. Hamill.

Patterson Laboratories
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226 Jensen, Mogens Krogh, & Melchior, Johannes Chr. Possible partial trisomy of a chromosome of group 6-X-12 and familial translocation heterozygosity in a child with congenital abnormalities. Developmental Medicine and Child Neurology, 9(3):313-318, 1967.

A male infant dying at 6 weeks of age with multiple anomalies had a partial 6-X-12 trisomy. The product of a normal pregnancy and delivery, the S had cleft palate, low-set ears, skeletal malformations, simian creases, and a ventricular septal defect. Cytogenetic studies revealed an abnormally large chromosome of the 13-15 series. Karyotypes of the propositus's clinically normal father and sister demonstrated the same abnormal chromosome plus an extra chromosome of the 16-18 series and deletion of 1 of the 6-X-12 series. Translocation of part of a 6-X-12 chromosome and a 13-15 chromosome could produce this picture. The S retained the 6-X-12 chromosome, thus creating the abnormal phenotype. Studies of families of Ss with chromosomal abnormalities may allow better gene location on specific chromosomes. (10 refs.) - W. A. Hamill.

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Gynecology
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227 Bloom, Gerald E., Gerald, Park S. & Reisman, Leonard E. Ring D chromosome: A second case associated with anomalous haptoglobin inheritance. Science, 156(3783): 1746-1748, 1967.

A MR child with a ring D chromosome derived from chromosome 13 and anomalous inheritance of haptoglobulin is the second reported case which suggests that the locus for the haptoglobin alpha-chain is on one end of chromosome 13. Clinical findings are described elsewhere. Haptoglobin was typed, subtyped, and quantitatively determined. The propositus was ahaptoglobinemic and presumed to have a single haptoglobin gene 1WEAK. The father and other relatives showed an unusual 2-1WEAK pattern with a decreased quantity of haptoglobin. Subtyping showed an alpha-chain band in the 2 position. The unusual electrophoretic pattern indicates the presence of an atypical haptoblobin gene. Autoradiographic analysis showed that both patients had a ring derived from D_1 or No. 13 chromosome. These findings are interpreted to mean that a locus for the alpha-chain of haptoglobin is situated on one end of a D chromosome. The locus is then lost during formation of the ring. The location of the locus on the long arm or short arm cannot be ascertained. (18 refs.) - R. Froelich.

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228 Hecht, Frederick, Weleber, Richard G., & Giblett, Eloise R. Chromosome anomalies. Lancet, 1(7494):848, 1967. (Letter)

Two patients with a ring G chromosome are discussed. The first showed the G-deletion syndrome or "antimongolism" because many of the abnormalities appear antithetical to those observed in Down's syndrome. The second patient is different from antimongolism and suggests a new G-deletion syndrome. This

28-month-old girl shows no evidence of chromosomal mosaicism in lymphocytes and is MR. (3 refs.) - J. Snodgrass.

Division of Medical Genetics
University of Oregon Medical School
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229 Carr, David H. Chromosome anomalies as a cause of spontaneous abortion. American Journal of Obstetrics and Gynecology, 97(3):283-293, 1967.

Chromosome analysis of 227 random spontaneous abortions showed that 50 of these had chromosomal anomalies. The studies were done after culturing the fetal tissues. Of the 50 with anomalies, 12 were XO, 9 were triploid, 9 had trisomy of an E group chromosome, 6 had trisomy of a D chromosome, 6 had trisomy of a G chromosome, 2 were tetraploid, and 2 had trisomy of a C chromosome. One example each of trisomy A, B, F, and double trisomy was also found. The sex of the specimens did not differ significantly from a 1:1 ratio. The mean maternal age was significantly greater in the trisomic specimens than in the normal specimens ($p < 0.01$) and the mean duration of pregnancy was significantly shorter in the group with chromosomal anomalies ($p < 0.001$). However, the previous obstetrical histories did not differ significantly in any respect in the 2 groups. The much higher percentage of chromosomal anomalies in these specimens than in live-born babies suggests that these abnormal fetuses are generally rejected by the uterus. This also holds true for each of the individual anomalies seen in this series; several of the anomalies present in this series have never been seen in living subjects. (66 refs.) - H. West.

Department of Anatomy, Health Sciences Centre
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230 Adams, Morton S., & Neel, James V. Children of incest. Pediatrics, 40 (1):55-62, 1967.

Study of 18 incestuous unions showed that children of incest are a high-risk group for infant death, major congenital anomalies, and MR. There were 12 brother-sister matings and 6 father-daughter matings. Eighteen unwed mothers were selected as controls matched for age, race, weight, stature, intelligence, and socioeconomic status. The involved sibs in the brother-sister matings were of average intelligence except for 1 couple. The average age of the female was 15.6 years. The father-daughter matings occurred in lower socioeconomic families with 3 females having low IQs (77, 75, and 58). The average age of the female was 17 years. The 18 children resulting from the incestuous unions had a normal sex distribution, and were one-half pound lighter at birth than controls. Seven were normal at 6 months of age. Of the remaining 11, 2 died in the neonatal period, 1 died at 2 months with glycogen storage disease, 1 had bilateral cleft lip, 2 were severely MR with spastic cerebral palsy and seizures, and 3 were less severely MR with IQ's of about 70. None of the control children died or had MR and only 1 child had a major congenital anomaly. The 28 percent increase in defects or death was above the expected result (16 to 20 percent) extrapolated from first cousin unions. (12 refs.) - R. Froelich.

Human Genetics Branch
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231 Penrose, L. S., & Loesch, Danuta. A study of dermal ridge width in the second (palmar) interdigital area with special reference to aneuploid states. Journal of Mental Deficiency Research, 11(2):36-42, 1967.

A tendency for increased ridge width with increasing number of sex chromosomes in the karyotype was revealed in an investigation of the mean width of dermal ridges in the second (palmar) interdigital area (a-b interval). Ss were 120 normal adults used as controls, 114 adults with sex chromosomal disorders, 156 adult mongoloids, and 1 adult with Down-Klinefelter's syndrome. Males had a greater mean ridge width than females. The narrowest dermal ridges were found in Turner's syndrome and the widest in XXXXY males. Triple-X females had wider ridges than normal females but not to a significant degree. Turner's syndrome females had highly significant narrow ridges. XXY males had only slightly wider ridges. It appeared that the Y chromosome had more of an effect on this characteristic than the X chromosome. Since the dermal ridge is related to body size and stature, the variations may be affected by this. Both male and female mongoloids had narrower dermal ridges than controls which could be a reflection of their stature. The S with Down-Klinefelter's syndrome had a dermal ridge width (500 microns) that was consistent with other XY mongoloids. All groups showed a comparable natural variation which suggests

that the effects of the chromosomal complement are superimposed on natural variation. (8 refs.) - R. Froelich.

Kennedy-Galton Centre
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232 Priest, Jean H., & Robinson, Arthur. Dermatoglyphics in Down's syndrome and congenital rubella. Lancet, 1(7491):683, 1967. (Letter)

Analysis of over 600 palm and foot prints revealed 3 persons with bilateral arch tibial plantar hallucal patterns and 1 with a unilateral arch tibial plantar hallucal pattern who did not have a clinical diagnosis of Down's syndrome. Case material suggests an association with congenital rubella which indicates the possibility that these dermal abnormalities are associated with a group of clinical conditions including both Down's syndrome and congenital rubella. (2 refs.) - J. Snodgrass.

Departments of Pathology and
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233 Jacobson, Cecil B. The nature of the chromosomal defect in mongolism. Clinical Proceedings of Children's Hospital of the District of Columbia, 23(2):43-48, 1967.

An extra set of genes from chromosome number 21 is present in Ss with Down's syndrome. This may be due to: an extra complete chromosome 21 (trisomy 21); translocation of the genetic material from this chromosome to another 21 chromosome (G/G translocation) or to a different chromosome (centromere fusion); or reduplication of the long chromatid arms of 1 chromosome 21 (G/G isochromosome). The reproductive risk of each type differs and depends on several factors: increased maternal age, familial susceptibility toward nondisjunction type of chromosomal translocation, previous mutagenic exposure (including maternal intra-uterine exposure) and type of mosaicism. (3 refs.) - W. A. Hammill.

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234 Wolstenholme, G. E. W., & Porter, Ruth., eds. Mongolism. (Ciba Foundation Study Group No. 25.) Boston, Massachusetts, Little, Brown, 1967, 99 p. $2.52.

Proceedings of a Ciba Foundation study group held at Portland Place, London, on May 10, 1966 includes 7 papers about mongolism and discussions provided by 21 distinguished participants. A study of 834 cases of Down's syndrome in Japan revealed little that was different from the pattern for Caucasians. A study of 1,344 individuals with Down's syndrome in Sweden revealed no evidence that would suggest a recessive gene influence on the incidence of this disorder. Dermal pattern studies in mongoloids could not be used to confirm or reject the hypothesis that mongolism consists of 2 similar syndromes caused by trisomy 21 and trisomy 22. DNA synthesis may be slowed down in cells with mongoloid karyotypes, however, DNA replication pattern studies led to uncertain results and were difficult to evaluate. The increased enzyme activities in the granulocytes of mongoloid Ss cannot be fully explained by the presence of an extra gene. Environmental factors as the primary cause of the leukocyte disturbance is an alternative hypothesis. (77 refs.) - R. Froelich.

CONTENTS: Parental Age, Live-Birth Order, and Pregnancy-Free Interval in Down's Syndrome in Japan; Consanguineous Marriages and Mongolism; Correlation of Dermal Patterns on Finger-Tips and Toes in Mongolism; A Suggested Use of Dermatoglyphic Analysis in Mongolism; DNA Synthesis in Cells Grown in Tissue Culture from Patients with Mongolism; DNA Replication Patterns of Chromosomes Numbers 21-22 in Female Mosaic Mongols; Abnormal Granulocyte Kinetics: An Explanation for the Atypical Granulocyte Enzyme Activities Observed in Trisomy 21.

235 Ghosh, Shanti. Down's syndrome in India. British Medical Journal, 3(5560):309, 1967. (Letter)

In a study of 4,353 neonates in New Delhi, India, the incidence of mongolism was 1.4 cases per 1,000 births. The data disagrees with a previous report of no mongoloids among 70,000 births in Alexandria, Bombay, and Calcutta. (1 ref.) - W. Asher.

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236 Øster, Jakob. The child with Down's syndrome (mongolism), his parents, and the community. Acta Paediatrica Scandinavica, Supplement 172: 177-181, 1967.

The possibility of diagnosis at or shortly after birth makes mongolism different from many forms of MR. The parents must be given an intelligent appraisal of the situation in order to be prepared to deal with the future problems emotionally and logistically. Early development is similar to other children but slower--the same emotional needs exist. Total family understanding will allow harmonious existence with siblings of mongoloid Ss. They will never reach full independence in society, but properly trained mongoloids can and do function quite well and usefully. Care at home with proper use of nurseries, special schools, and workshops can have very gratifying results. (3 refs.) - W. A. Hammill.

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Randers, Denmark

237 Fisichelli, Vincent R., & Karelitz, Samuel. Frequency spectra of the cries of normal infants and those with Down's syndrome. Psychonomic Science, 6(4):195-196, 1966.

The cries of 4 normal infants were found to have similar frequency ranges but richer spectral content, more activity, less sound level variation, and more homogeneousity than the cries of 4 infants with Down's syndrome. The mongoloid infants were all male and 6 months of age. The normal infants were matched for age and sex. The infants were stimulated to cry and the cries were tape recorded. The sounds were analyzed by a Panoramic Sonic Analyzer (Model LP-1a S/N). The cries of the normal infants were typically graphed as a white rectangular cascade ranging from 400 to 8,000 cps. The cries of the mongoloid infants were not homogenous and varied greatly among themselves. Spectral data showed greater activity in the cries of normal infants. Individuals listening to the cries described differences in the cries of mongoloid infants that probably are due to detectable timbre differences. (8 refs.) - R. Froelich.

Hunter College
New York, New York

238 Starkman, Monica N., & Shaw, Margery W. Atypical acrocentric chromosomes in Negro and Caucasian mongols. American Journal of Human Genetics, 19(2):162-173, 1967.

No translocations were found among 20 Negro and 20 Caucasian mongols. There were morphological abnormalities in the satellite or short arm region of the acrocentric chromosome in 6 Negroes and 2 Caucasians. One Negro had marked asymmetry of chromosome pair 16. All mongol subjects were institutionalized. Leukocyte cultures were done using a modified Moorhead method. A control series study of 20 normal Caucasian and 20 normal Negro males showed 3 Negroes with similar abnormalities of the acrocentric chromosomes. Two Caucasian males had an apparent deletion of the short arm of 1 acrocentric chromosome and the Negro with marked asymmetry of chromosome pair 16 had variable morphology of the atypical chromosome. The maternal ages of the 9 mongols with abnormalities were either below 20 years or over 31 years. The suggestion that translocation mongolism is more frequent among Negroes than Caucasians was not supported in this study. Although the sample is too small for conclusions, the cytologic variations found to be more frequent in Negroes may be racial polymorphism. Another possibility is that these small variations do bear a relationship to nondisjunction. (28 refs.) - R. Froelich.

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239 Roche, A. F. Skeletal maturation and elongation in Down's disease (mongolism). Eugenics Review, 59(1):11-21, 1967.

Types of chromosomal defects in Down's syndrome are reviewed in terms of effect on skeletal maturation and elongation. Down's disease is associated with an additional chromosome in the 21 position with translocation as a possible cause. Skeletal maturation findings from postmortem and radiologic studies indicate that the mean skeletal maturity in the hand-wrist area is less than the corresponding chronological age until adulthood. There are questionable differences between males and females which must be resolved by further study--the mean rates of skeletal maturation in chronological ages over 6 do not differ from normal children. Skeletal elongation of individual bones varies with age and sex. Dissociation between skeletal maturation and elongation occurs during adolescence. Age specific effects of chromosome 21 are implied. If chromosome 21 is responsible for these abnormalities, prevention of trisomy 21 and prevention of the

deleterious effects of this additional chromosome on many types of body cells is a challenging area of research. (105 refs.) - W. Asher.

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240 Shapiro, Burton L., Gorlin, Robert J., Redman, Robert S., & Bruhl, Heinz H. The palate and Down's syndrome. New England Journal of Medicine, 276(26):1460-1463, 1967.

Direct intraoral measurements in 153 Ss with Down's syndrome (age 6 to adult) revealed the palate to be shorter and narrower but no higher than normal controls. The horizontal plane between the lingual-cervical lines of the first molars and the interdental papilla of the central incisors was the base. Height was determined to the posterior midline of the hard palate, length from the central incisors to the junction of the soft and hard palate, and width measured between the first molars. No Down's Ss were greater than 2 standard deviations higher than the normals. Palatal width was less than the normal mean in 140 of 153 Ss and length was less in all cases. The narrow palate of normal height gives the impression of being arched as suggested by previous non-metric studies. Postnatal growth of the palate is primarily in length and is thus most abnormal in Ss with Down's syndrome. (8 refs.) - W. A. Hammill.

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Minneapolis, Minnesota 55455

241 de Vries, G. F., & Vogelzang, A. A. Mycoplasma and Down's syndrome. Lancet, 1(7482):160-161, 1967. (Letter)

In vitro studies do not, as yet, yield data which explain the in vivo mechanism for the origin of Down's syndrome. Analysis of 265 human diploid lung cells from cultures infected with mycoplasma hominis revealed no significant increase in numerical or structural chromosomal aberrations, or in polyploidy when compared with 400 cells from control cultures. There was no consistent loss of chromatin material of the short arm of chromosomes 21 and 22 in cells of infected cultures. (5 refs.) - J. Snodgrass.

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242 Lampert, F. DNS (Feulgen)- und Chromosomenuntersuchungen bei Mongolismus mit akuter Leukämie. (DNA (Feulgen) and chromosome examinations in mongolism with acute leukemia.) Klinische Wochenschrift, 45(10): 512-516, 1967.

Acute lymphoblastic leukemia was diagnosed in a 6-year-old boy with mongolism and was successfully treated with cytostatics. Feulgenometric DNA determinations of the malignant cells of the bone marrow before treatment and of the normal erythroblasts of the bone marrow after treatment did not reveal any gross deviation from the normal diploid cellular DNA content. In chromosome analysis of the peripheral blood and of the bone marrow before and after therapy, a modal chromosome number of 47 with the typical trisomy 21 was always found. In DNA measurements and planimetric determinations of the size of single chromosomes, correlation between DNA content and chromosome size could be demonstrated. The patient died of a relapse 194 days after therapy was started. (22 refs.) - (Source: Journal of the American Medical Association, 200(9):167, 1967.

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243 Pearson, Howard A. Studies of granulopoiesis and granulocyte kinetics in Down's syndrome. Pediatrics, 40(1):92-95, 1967.

No differences of granulopoiesis or granulocyte kinetics were found among 5 children with Down's syndrome and 5 MR controls all from the same institution. The patients were between 2 and 14 years of age and controls were matched for age and weight. Bone marrow studies revealed moderate myeloid predominance in 1 mongoloid and 2 controls. Other studies including cellularity and granulocyte maturation were normal. Piromen studies showed normal granulocyte count curves with no significant differences between the groups. No significant differences were found in serum muramidase levels determined in 6 additional mongoloids and 6 additional control Ss. The mongoloids in this series had normal mitotic and maturation granulocyte pools, normal marrow granulocyte reserves, and normal granulocyte turnover rate. It is unlikely that the increased leukocyte enzymes found in mongoloids are caused by immature granulocytes. (14 refs.) - R. Froelich.

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244 Wren, P. J., *Evans, D. A. P., Vetters, J. M., & Chew, A. Autoimmune antibodies in mongol families. Lancet, 2 (7508):186-188, 1967.

The suggestion that thyroid autoantibodies are an etiological factor in the production of mongoloid chromosomal karyotypes in offspring was not supported as no significant differences of circulating thyroid autoantibodies were found between 64 mothers of mongols and 70 mothers of controls. The mongol and control children were matched for age, sex, socioeconomic status, and place of residence. Blood samples were obtained from both parents and a non-mongol sibling. No differences in the incidence of autoantibodies were found between the fathers or the siblings. The incidence of autoantibodies did not increase with age. There appeared to be more clinical thyroid disease among the mothers of mongols with 11 mothers showing abnormalities that were more serious than the 10 found in control mothers. Those mothers possessing thyroid autoantibodies have not produced any further mongol offspring. One mother that had 2 mongol offspring did not have thyroid autoantibodies. (11 refs.) - R. Froelich.

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Department of Medicine
Crown Street
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245 Dallaire, Louis, & Flynn, Diana. Frequency of antibodies to thyroglobulin in relation to gravidity and to Down's syndrome. Canadian Medical Association Journal, 97(5):209-211, 1967.

A search was made for the presence of thyroid antibodies on 4 groups of adult women: 50 mothers of aneuploid children; 51 mothers of children who had a normal chromosomal pattern and multiple malformations; 50 mothers of normal children; and 120 nulliparous women between 19 and 69 years of age. Mothers of children with trisomy-21 (Down's syndrome) had a higher frequency of thyroglobulin antibodies than control mothers. The incidence of positive sera was strikingly low among the group of nulliparous women, and the average number of pregnancies was high, though not significantly so, among mothers who had a positive antibody titre. It seems that gravidity plays a role in the production of thyroglobulin antibodies. The role of thyroglobulin antibodies in cytogenetic aberrations is discussed in the light of these findings. Possibilities for explaining the relationship with Down's syndrome are a stimulation of non-disjunction by thyroglobulin antibody or a stimulation of thyroglobulin antibody by the presence of an aneuploid fetus. (15 refs.) - (Source: CMAJ, edited)

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246 Blumberg, Baruch S., Gerstley, Betty Jane S., Hungerford, David A., London, W. Thomas, & Sutnick, Alton I. A serum antigen (Australia antigen) in Down's syndrome, leukemia, and hepatitis. Annals of Internal Medicine, 66(5):924-931, 1967.

Australia antigen (Au(1)) which previously had been found in patients with leukemia or hepatitis was found in 25 of 84 institutionalized mongoloid patients. The study patients included 75 male mongoloids from 1 hospital and 5 girls and 4 boys, also mongoloids, from another hospital. The control group consisted of 76 male MR institutionalized patients and 82 patients with polycythemia vera. The frequency of Au(1) antigen in the 76 male controls was 4, 3 of whom were found to have some stigmata of Down's syndrome. The difference between the mongoloid and control group was highly significant ($P<0.001$). The frequency of Au(1) antigen in the mongoloid population decreased with increasing age. None of the patients with polycythemia vera had detectable Au(1) antigen. A study in the Philippines demonstrated a higher incidence of the antigen in patients with lepromatous leprosy (9.4 percent) than in the controls (4.8 percent). Positive Au(1) mongoloid patients had higher vitamin B_{12} levels in the blood ($p<0.01$). The frequency of Au(1) antigen in other syndromes includes hemophilia (5 percent), viral hepatitis (10.4 percent), Hodgkin's disease (8.3 percent), leukemia and related diseases (9.0 percent), and thalassemia (2.4 percent). A family clustering of Au(1) antigen was found in the Philippines. A statistical relationship between Down's syndrome, viral hepatisis, and leukemia has been suggested previously. (27 refs.) - R. Froelich.

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247 Richards, B. W. Infectious hepatitis and Down's syndrome. Developmental Medicine and Child Neurology, 9(4):502-504, 1967.

Temporal and geographic clustering of cases of Down's syndrome suggests a causal relationship with infectious hepatitis in Australia. An 11-year review of Ss with Down's

syndrome established a statistical correlation with maternal hepatitis and affected Ss 9 months later. The incidence was higher in regions of high population density and poor sanitation. Mothers over 35 years of age were most affected, which suggests the susceptibility of the aging ovum. This association was not found in large comparable studies of Down's syndrome in Great Britain, Italy, or the United States. (13 refs.) - W. A. Hammill.

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Caterham, Surrey, England

248 Mosier, H. D. The neck-thigh radioiodine ratio in mongolism. Journal of Mental Deficiency Research, 11(2):97-105, 1967.

Ss with mongolism have a defective thyroidal iodine clearance as determined by the neck-thigh radioiodine ratio. Seventeen trisomy-21 mongoloids, matched for sex, chronological age, and social age (Vineland Social Maturity Scale) with MR Ss of other etiologies were placed in a metabolic ward for 21 days. Iodine intake and excretion were closely controlled and measured. Isotope counting over the neck and thigh were done 1 and 2 hours after injection of radioiodine. The neck-thigh ratio in the mongoloid Ss was significantly lower than in the control MR Ss. The presence of long-acting-thyroid-stimulator in mongoloids without hyperthyroidism suggests a compensatory mechanism. Defective ability to clear iodine may explain the high incidence of thyroid antibodies in mongolism. (32 refs.) - W. A. Hammill.

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249 Berman, Julian, Hultén, Maj, & Lindsten, Jan. Blood-serotonin in Down's syndrome. Lancet, 1(7492):730, 1967. (Letter)

Twenty-three Ss with Down's syndrome had a significantly lower level of whole blood serotonin than 19 MR controls; however, the with-in group comparison of the Ss with Down's syndrome (9 with translocation and 14 with trisomy) revealed no differences. In addition, the MR controls had higher levels of blood-serotonin than 19 normal controls. (8 refs.) - A. Clevenger.

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250 Kaufman, Joel M., & O'Brien, William M. Hyperuricemia in mongolism. New England Journal of Medicine, 276(17):953-956, 1967.

Mongoloids (107 Ss) had significantly increased levels of serum uric acid when compared with controls. The age range was 3 to 20 years with 107 controls matched for age, sex, and race. The controls were MRs from the same institutions as the mongoloids. The mean serum uric acid level for the mongoloids was 5.53 mg per 100 ml and 4.13 mg per 100 ml for the controls ($p < 0.001$). A likely hypothesis for the hyperuricemia found in mongolism is the presence of some gene or genes on the extra chromosome that either cause an overproduction or an underexcretion of uric acid. Other factors that affected the serum uric acid were height, weight, body surface, hemoglobin, and subcutaneous fat. Uric acid levels increased as each of these factors increased but this was true for both the mongoloid and control group and was not responsible for the difference found among the mongoloids. (13 refs.) - R. Froelich.

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Owing Mills, Maryland

251 Herring, Rufus M., Phillips, John, Goodman, Harold O., & King, J. S., Jr. Enzymes in Down's syndrome. Lancet, 1(7500): 1157-1158, 1967. (Letter)

Leucocyte alkaline phosphate (LAP) and erythrocyte glucose-6-phosphate dehydrogenase (G-6-PD) were determined within 5 hours of sample collection from MR Ss in institutions. All DS (Down's syndrome) patients had standard trisomy 21. LAP activities were not significantly different between sexes or between female DS patients and female controls, but significant difference was found between male DS patients and male controls ($t=2.42$, $P < 0.05$). Mean G-6-PD activities for DS patients were significantly higher than control means in both sexes. These findings fail to corroborate other research. (5 refs.) - J. Snodgrass.

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Winston-Salem, North Carolina 27103

252 De La Chapelle, A., Kjessler, B., Johansson, C-J., Saari, R., & Kauste, O. Mitotic and meiotic chromosomes in a family with repeated miscarriages and two children

with trisomy-G Down's syndrome. Journal of Mental Deficiency Research, 11(2):69-78, 1967.

An investigation of a family who experienced 3 miscarriages and the birth of 2 children with trisomy-G Down's syndrome failed to show abnormal mitotic karyotypes in the parents or any abnormalities of the father's meiosis. The parents were clinically normal and in good health, with no family history of mongolism. They were married when the wife was 29 and the husband 30 years of age. Two spontaneous abortions occurred, 1 in the third month and 1 in the second month of gestation. Following this, 2 mongoloid boys were born 1 year apart. The second died of recurrent infections and cardiac anomalies. This sequence of events produced an unusual counseling problem which was made more difficult by the inconclusive cytogenetic investigation. A fifth pregnancy resulted in a spontaneous abortion at 2 months gestation. Testicular histology, sperm analysis, and blood group investigation of the father gave no evidence that would question paternity. Several explanations for this occurrence are suggested including gonadal mosaicism (probably of the mother), a structural rearrangement of a G chromosome in the parents, or failing chiasma formation. The possibility of chance alone is remote. (17 refs.) - R. Froelich.

The Folkhälsan Institute of Genetics
Helsingfors, Finland

253 Ong, Beale H., Jacobson, Cecil B., Paine, Richmond S., & Mahanand, Dershanananand. Carriers of D/G translocation. Lancet, 1(7480):51, 1967. (Letter)

Five non-affected parental carriers of D/G translocation were studied for a possible positional effect. Cellular enzyme and serotonin levels were no different from those of normals and translocation Down's syndrome patients. Levels of creatine phosphokinase (CPK) in serum were increased in both trisomic and translocation Down's syndrome patients but normal in carriers. One genetic determinant for CPK level may be located on the long arm of the G autosome. (1 ref.) - J. Snodgrass.

Children's Hospital of the District of Columbia
Washington, D. C.

254 Richards, B. W. Mosaic Down's syndrome. Lancet, 1(7491):683-684, 1967. (Letter)

Analysis of over 140 cases of mosaic Down's syndrome reveals no evidence of proliferative disadvantage of cells with abnormal karyotypes. The new findings which will soon be published also do not support the hypothesis relating the proportion of trisomic cells to maternal age at birth. (3 refs.) - J. Snodgrass.

St. Lawrence's Hospital
Caterham, Surrey, England

255 Ong, Beale H., Rosner, Fred, Mahanand, Dershanananand, Houck, John C., & Paine, Richmond S. Clinical, psychological and radiological comparisons of trisomic and translocation Down's syndrome. Developmental Medicine and Child Neurology, 9(3):307-312, 1967.

Trisomic mongoloids do not differ clinically psychologically or radiologically from translocation mongoloids. Twelve trisomic mongoloid Ss matched for age, sex, and race were compared with 12 translocation mongoloid Ss to find criteria for differentiation where cytogenetic facilities are not available. Evaluation included: careful patient and family histories, complete physical examination, dermatoglyphics, roentgens of the pelvis, and Stanford-Binet (Form L-M) psychometric examination. The translocation Ss had a higher maternal age and lower iliac index than the trisomic Ss but the differences were not reliable enough to be helpful. No other differences were noted in any of the other parameters measured. In spite of the significant biochemical differences in these 2 syndromes, clinical differentiation is not possible. (11 refs.) - W. A. Hammill.

Department of Neurology
Children's Hospital of the District of Columbia
Washington, D. C.

256 Nadler, Henry L., Inouye, Tohru, & Hsia, David Yi-Yung. Enzymes in cultivated human fibroblasts derived from patients with autosomal trisomy syndromes. American Journal of Human Genetics, 19(2):94-99, 1967.

No significant differences of activity of alkaline phosphatase, acid phosphatase, glucose-6-phosphate dehydrogenase, or galactose-1-phosphate uridyl transferase were found in

cultivated fibroblasts from eleven 18-trisomics, 4 D_1-trisomics, 5 mongoloids, and 10 controls. Fibroblasts were obtained from skin biopsies. Enzyme activity has been found to be increased in leukocytes of individuals with autosomal trisomy syndromes, particularly mongoloids. Since this has not been found in the fibroblasts of these individuals, the increased activity in whole blood cells probably is caused by some specific property of the white blood cell rather than gene location or triple gene dose effect. (30 refs.) - R. Froelich.

Department of Pediatrics
Northwestern University Medical School
Chicago, Illinois 60614

257 Back, F., Dörmer, P., Baumann, P., & Olbrich, E. Trisomy 21 or 22 in Down's syndrome? Lancet, 1(7501):1228, 1967. (Letter)

Autoradiographic identification of the extra chromosome in Down's syndrome as being 21 or 22 is questionable by present techniques. Examination of 216 mitoses from 5 Ss with Down's syndrome (G-1 trisomy) by autoradiography did not produce clear separation between the 2 pairs. The probable cause of the difficulty is either the proximity of the termination phase of DNA synthesis or asynchrony of the homologues. Partial fault may be ascribed to methodologic factors that will be resolved with improved techniques. (6 refs.) - W. A. Hammill.

Hematology Institute of the Society of Radiation Research
Munich, Germany

258 Welch, J. Philip. Mosaic Down's syndrome. Lancet, 1(7501):1229, 1967. (Letter)

Down's syndrome (21-trisomy) may result from maternal trisomy 21 mosaicism. Seven unselected reported cases of trisomy 21 all had maternal mosaicism. Grandmaternal age was 27 years or older in all cases. The finding of normal maternal age is biased by cytogeneticists' interest in abnormal offspring of young mothers. Procreation of male Down's syndrome Ss is rare, due to the competition for successful fertilization by the male gamete. (12 refs.) - W. A. Hammill.

Johns Hopkins University School of Medicine
Baltimore, Maryland 21205

259 Marks, James F., Wiggins, Kenneth M., & Spector, Billie J. Trisomy 21-trisomy 18 mosaicism in a boy with clinical Down's syndrome. Journal of Pediatrics, 71 (1):126-128, 1967.

A 6-year-old boy with clinical features of Down's syndrome was found to have 2 mosaic cell lines, one a typical trisomy 21 and the other a typical trisomy 18 which also had 47 chromosomes. He had an IQ of less than 30 and never spoke. He had a cardiac abnormality, rhinorrhea, and hyperactivity. A total of 40 cells were karyotyped from 2 leukocyte cultures. Thirty-three cells were trisomy 21 and 7 cells were trisomy 18. Chromosome studies on the parents and sister were normal. Dermatoglyphic patterns were typically those of trisomy 21 with no suggestion of trisomy 18. X-rays of the pelvis were consistent with mongolism. This is the first known reported case of a mongol with a mosaicism between chromosome 21 and another autosomal trisomy. (3 refs.) - R. Froelich.

Department of Pediatrics
University of Texas Southwestern Medical School
Dallas, Texas

260 Cohen, Maimon M., & Bumbalo, Thomas S. Double aneuploidy. American Journal of Diseases of Children, 113(4):483-486, 1967.

Cytogenetic studies revealed the second reported case of trisomy 18/XXY. The S was a phenotypic male with clinical features of trisomy 18. Autopsy was not performed, but the external genitalia were normal prepuberal male. Cytogenetic studies in Ss with possible autosomal defects may demonstrate concomitant sex chromosomal anomalies not obvious phenotypically in prepubertal Ss. (30 refs.) - W. A. Hammill.

86 Hodge Avenue
Buffalo, New York 14222

261 Robinson, Arthur, & Puck, Theodore T. Studies on chromosomal nondisjunction in man. II. American Journal of Human Genetics, 19(2):112-129, 1967.

Twenty-five chromosomal anomalies were detected in 6,900 newborns studied for chromosomal aberrations between December 1962 and April 1966. Amniotic material was used for chromosomal analysis in a screening procedure described by Klinger to detect sex chromosome disorders and trisomy 21. Newborns screened were from a private and a charity hospital in

Denver, Colorado. Of 12 sex chromosome anomalies, 11 occurred between April and the beginning of October. There were 3 with Klinefelter's syndrome, 2 with XXX syndrome, 3 with XO syndrome, and 4 with mosaicism. There were no effects on incidence from maternal age, paternal age, or ethnic group but the 11 occurring in the 6-month period all had families with depressed socioeconomic status. There was no seasonal or socioeconomic effect on the incidence of trisomy 21 but there was a strong effect of advanced maternal age. Although no explanation for the effects of season or socioeconomic status on incidence of sex chromosome disorder could be determined, there is good evidence of nonrandom factors affecting these aberrations and further public health, population, and genetic studies are indicated. The possibility that a rubella epidemic in Denver during this time had an effect is currently being investigated. (29 refs.) - R. Froelich.

Department of Biophysics
University of Colorado Medical Center
Denver, Colorado 80220

262 Federman, Daniel D. Disorders of sexual development. New England Journal of Medicine, 277(7):351-360, 1967.

Disorders of sexual development including abnormalities of gonadal development and abnormalities of fetal endocrinology are discussed with case material, clinical studies, and a review of the subject. The 4 main steps of normal sexual development are described. The disorders of sexual development include infertility with genital ambiguity, infertility without genital ambiguity, and ambiguity without infertility. Klinefelter's and Turner's syndrome are included in the first group. The second group includes true hermaphroditism, mixed gonadal dysgenesis, and dysgenetic male pseudohermaphroditism. Two patients with variation of XY/XO mosaicism are presented. Four patients with varying degrees of familial male pseudohermaphroditism are described. There is some suggestion that this syndrome is transmitted by an X-linked recessive trait but since these patients are infertile, an autosomal dominant inheritance cannot be ruled out. Female pseudohermaphroditism is the only disorder considered in this paper in which patients can reproduce if properly treated. These women are genetic and gonadal females with some degree of virilization. An extra X chromosome is associated with MR which is more pronounced with additional X chromosomes in the karyotype. (16 refs.) - R. Froelich.

Harvard Medical School
Boston, Massachusetts

263 Golob, E., Fischer, P., & Kunze-Mühl, E. Abnormal X-chromosomes. German Medical Monthly, 12(6):261-264, 1967.

Two individuals with gonadal dysgenesis demonstrated morphological anomalies of their single X chromosome--deletion of the short arm and an X-isochromosome. Case 1 was a 26-year-old woman with primary amenorrhea, low intelligence, convergent strabismus, feminine appearance and temperament, and hypoplastic genitalia. A small chromatin body was present in 20 percent of nuclei of buccal scrapings. The chromosome number was 46. Every metaphase showed an abnormality thought to be a deletion of the short arm of 1 X-chromosome. Case 2 was a 15-year-old girl with average intelligence, infantile physique, short neck, low hairline, undeveloped breasts, cubitus valgus, and infantile genitalia. A large chromatin body was present in 25 percent of buccal cell nuclei. The chromosome number was 46. The No. 3 chromosome had an almost median centromere which was probably the X-isochromosome. Case 1 had 15 chromosomes in Group 6-X-12 and an extra chromosome in Group 13-15. Case 2 had 15 chromosomes in Group 6-X-12 and an unusually large Barr body. These 2 cases are examples of gonadal dysgenesis with a normal chromosome count but with abnormal X-chromosomes. (23 refs.) - R. Froelich.

Universitäts-Frauenklinik
Spitalgasse 23
A 1095 Vienna, Austria

264 Greenblatt, R. B,, Byrd, J. Rogers, McDonough, P. G., & Mahesh, V. B. The spectrum of gonadal dysgenesis. A clinical, cytogenetic, and pathologic study. American Journal of Obstetrics and Gynecology, 98(2): 151-172, 1967.

A clinical, histopathologic, and cytogenetic study of 31 Ss with gonadal dysgenesis demonstrated similar histologic findings, but widely varying clinical features. All Ss had biopsy or autopsy gonadal tissue examination, buccal smear for chromatin bodies, cytogenetic studies, and complete physical examination. Sex normal (XX) and 25 abnormal sex chromosome karyotypes of ten different types

were found. Ss with clinical features of gonadal dysgenesis and negative sex chromatin do not need chromosomal analysis or gonad biopsy for diagnosis. Ss without typical clinical features who are either sex chromatin positive or negative should have cytogenetic studies. If abnormal sex chromosomes are found, biopsy is not necessary for diagnosis, as all Ss with abnormal karyotypes have streak gonads. If normal (XX) chromosomes are found, gonadal visualization, and possibly biopsy, is mandatory. (41 refs.) - W. A. Hammill.

Medical College of Georgia
Augusta, Georgia

265 Romani, J.-D., Lôo, H., Reyes, F., Lôo, P., Saba, S., & Parry, J. Sur un cas de maladie de Turner. (A case of Turner's syndrome). Annales Medico Psychologiques, 125(1):102-105, 1967.

At pubescence a woman with Turner's syndrome (CA,20; IQ,57) and immature development did not menstruate, became depressed, lost initiative, and finally was hospitalized. The S displayed biological and vascular signs of prediabetes, normal thyroid function, normal neurological response, psychological problems, no mature secondary sexual characteristics, and a karyotype of 45 chromosomes (44 autosomes and XO). With hormonal therapy, rough breast outlines have appeared and regular menstrual periods have begun. Psychological correlates have not yet been alleviated. (2 refs.) - C. A. Pepper.

Service d'Endocrinologie
Hôpital Laënnec
Paris, France

266 Miller, Robert C., *Goodman, Richard M., Miller, Frances R., & Nusbaum, Lana. A new variant of Klinefelter's syndrome with a presumptive deleted Y chromosome. Paper presented at the regional meeting of The American College of Physicians, Morgantown, West Virginia, January 20, 1967, 13 p. Mimeographed.

A patient with gynecomastia, female habitus, hypogonadism (azospermia), positive chromatin bodies, skeletal abnormalities, microcephaly, and SMR was found to have a partially deleted Y chromosome. Cytogenetic studies suggested that the long arm of the Y chromosome was deleted. No other family members demonstrated this abnormality. The Y chromosome in humans may have genetic material other than for maleness as severe MR and the multiple anomalies in this S are not usual components of Klinefelter's syndrome. (27 refs.) - W. A. Hammill.

*Department of Medicine
University Hospital
Columbus, Ohio 43210

267 Becker, Kenneth L., Hoffman, David L., Albert, A., Underdahl, Laurentius O., & Mason, Harold L. Klinefelter's syndrome. Archives of Internal Medicine, 118(October): 314-321, 1966.

Of 50 patients with Klinefelter's syndrome examined at the Mayo Clinic over a 6-year period, only 2 were definitely MR but 17 had psychiatric disorders. Their ages ranged from 17 to 66 years (average 38 years) and only 20 percent had a chief complaint related to hypogonadism. All patients had small testes but evidence of undeveloped secondary sexual changes was not consistent or complete. Specific intelligence testing was not done but 78 percent had occupations not requiring educational or intellectual backgrounds. Most frequent psychiatric disorders were severe anxiety tension in 8, severe psychoneurosis in 4, paranoid schizophrenia in 2, psychophysiological reactions in 4, and depression in 2 patients. Fifty percent of the patients were significantly obese and basal metabolic rates were below normal in 43 percent. Semen analysis of 16 patients revealed absolutely no spermatozoa. The relatively low incidence of MR in this study may be due to selection factors. The relationship between the Klinefelter's syndrome phenotype, the clinical picture, and the XXY karyotype is discussed. (36 refs.) - R. Froelich.

Veterans' Administration Hospital
50 Irving Street Northwest
Washington, D. C. 20422

268 Gracey, M., & Fitzgerald, Margaret G. The XXYYY sex chromosome complement in a mentally retarded child. Australian Paediatric Journal, 3(2):119-121, 1967.

An 8-year-old phenotypic male with MR and aggressive behavior was found to have an XXYYY karyotype. He appeared normal for the first 3 years of life except for frequent respiratory infections. At 5 years, 11 months he was assessed for poor speech development and found to have interests and activities similar to a 3-year-old child. Examination at 8 years of age revealed acute nephritis, expressionless face, underdeveloped jaw, marked

lumbar lordosis, moderate flexion of the index and little finger, underriding thumb, bilateral pes planus, and possibly a webbing of the neck. Genitalia were normal. His behavior was moderately retarded, aggressive, regressed, disorganized, and attention seeking. Chromosomal analysis showed 49 chromosomes with 16 in group C and 7 in group G. A single chromatin body was found in 24 percent of cells. The father's karyotype was normal XY. This patient is the first reported case of XXYYY syndrome. (4 refs.) - R. Froelich.

Royal Children's Hospital
Melbourne, N.2, Australia

269 Boczkowski, K., & Casey, M. D. Pattern of DNA replication of the sex chromosomes in three males, two with XYY and one with XXYY karyotype. Nature, 213(5079):928-930, 1967.

The 2 XYY males were clinically normal on general physical examination but above average in height; the XXYY male was MR and had small testes. Peripheral blood leukocyte cultures were made from these 3 patients by a modification of the method of Moorhead et al. Grain counts were made on Y chromosomes, chromosomes of the 21-22 group, and in the XXYY individual on the late replicating X chromosome too. In the 3 individuals with 2 Y chromosomes, both Y chromosomes replicate late compared with the other small acrocentric chromosomes. Counts of grains showed that this replication pattern does not differ significantly from that in normal male cells. It was found that grain counts on the 2 Y chromosomes in the 3 abnormal individuals fell into a homogenous group which could therefore be considered to come from 1 population. In addition, the Y grain counts in each cell were homogenous. It seems, therefore, that the 2 Y chromosomes behave similarly with respect to DNA synthesis. In individuals with additional X chromosomes, marked asynchrony and pronounced late replication of these chromosomes have been found. (17 refs.) - (Source: Journal of the American Medical Association, 200(4):217-218, 1967)

University of Sheffield
Sheffield, England

270 Forssman, Hans. Epilepsy in an XYY man. Lancet, 7504(1):1389, 1967. (Letter)

A 23-year-old,6 ft. 5 in. male with epilepsy was found to have the XYY sex-chromatin constitution. He is MR and began to be extremely aggressive at age 10. After committing a number of thefts, he was pronounced exempt from legal punishment and hospitalized where he is on continuous anticonvulsant medication. The EEG is grossly abnormal and study revealed a 47th chromosome impossible to distinguish from a Y chromosome. (2 refs.) - J. Snodgrass.

Psychiatric Research Centre
St. Jorgen's Hospital
Lillhagen, Sweden

271 Parker, N. Genetic counselling. In: Australian Group for the Scientific Study of Mental Deficiency. Proceedings of the Fifth Annual Interstate Conference on Mental Deficiency. Van Pelt, J. D., ed. Brisbane, Australia, October 1966, p. 29-30.

There is a real need for well staffed counseling clinics for people wanting advice about genetic problems. The incidence of deaths due to genetic causes is rising, and the prime reason for consultation is the risk of having a second child with genetic abnormalities. There is now a sufficient number of trained people in genetics and medicine to provide the needed services. Genetic counseling remains an art encompassing the science of genetics and the capability of dealing with deep-seated human problems. (No refs.) - W. A. Hammill.

University of Queensland
Brisbane, Australia

PROFESSIONAL SERVICES

272 Baudouin, André. Quelle aide le médecin peut-il apporter aux parents? (What aid can the doctor bring to the parents?) Nos Enfants Inadaptes, quarterly review (special issue):4-7, 1967.

From the moment the doctor diagnoses a case of MR, 1 of his major tasks is to aid the parents in helping their child reach his maximum potential. The doctor must be honest with the parents as soon as he is sure the baby is retarded. The parents must be approached with understanding and tact, because of 2 dangerous and instinctive reactions--passive withdrawal from the unpleasant situation or hostility against society and self.

The doctor should avoid giving the parents only an optimistic picture in the face of a serious situation or giving the parents only a pessimistic picture with no element of hope or reassurance. Society has given people guilt feelings that one has sinned and a retarded child is God's punishment. The doctor has a momentous task to convince the parents that they are not at fault, but have just been given a greater responsibility in life. For serious cases, the child must be placed in an institution; the parents need instruction on the best methods of care so that institutional life will be as untraumatic as possible. Since parents tend either to demand too little or too much from this child, they must be taught how much he can take and try to press toward his optimal level. The doctor can help the parents continue an interest in their child throughout institution life and accept their child in adulthood. (No refs.) - D. Bammel

No address

273 American Association on Mental Deficiency, & U. S. Public Health Service, Mental Retardation Branch. Role of Physical Therapy in Mental Retardation. Proceedings of the Workshop for Physical Therapists held at the 90th Annual Convention of the American Association on Mental Deficiency, Chicago, Illinois, May, 1966, 105 p. Mimeographed.

A workshop on the "Role of Physical Therapy in MR" reflected a multi-disciplinary approach including neurology, psychology, physical therapy, nursing, occupational therapy, and education. MR is an extensive problem in the United States. Neurologic signs are clues to abnormality but underlying development must be understood. Bobath therapy, increased stimulation, and operant conditioning have fruitful application in MR work, even when applied by non-specialists. Physical therapists devised a school activity program from a special class survey and in New York helped the attendant inservice training. Parents of outpatient cerebral palsied individuals can be given indirect counseling through a common club. Customized equipment is recommended. (5-item bibliog.; 46 refs.) - R. D. Perkins.

CONTENTS: Neurological Development as a Basis for Physical Evaluation; Inhibition and Facilitation as a Basis for Treatment; Exploration of Operant Conditioning in Physical Therapy; The Challenge of Mental Retardation to the Physical Therapist; Programs and Issues; Learning Patterns of Children; Group Parent Counseling; Inter-professional Relationships in Developing Community Resources; Show and Tell; The Role of the Physical Therapist in Stimulating Neuromuscular Development and Behavioral Patterns; A Physical Therapy Program in the Public Schools; The Extendor Role of the Nurse in Occupational and Physical Therapy; The Role of United Cerebral Palsy Associations of New York State in Staff Training at State Schools for the Mentally Retarded; A Proposed Project to Demonstrate the Effectiveness of an Environmental Stimulation Service Program with Severely and Profoundly Retarded Non-Ambulatory Residents; Trends in Adaptive Equipment.

274 Green, Leila H. Inhibition and facilitation as a basis for treatment. In: American Association on Mental Deficiency, & U. S. Public Health Service, Mental Retardation Branch. Role of Physical Therapy in Mental Retardation. Proceedings of the Workshop for Physical Therapists held at the 90th Annual Convention of the American Association on Mental Deficiency, Chicago, Illinois, May, 1966, p. 13-20. Mimeographed.

Although facilitation and inhibition techniques effectively treat deficits in motor skills, physical therapists must also recognize a child's state of development in adaptive and communicative behavior. In Bobath facilitation techniques, automatic movements are obtained in response to handling and stimulation for the purpose of increasing muscle tone and regulating reciprocal muscle function. Righting reactions, head control, equilibrium, protective reactions, tonic neck reflex, disassociation of head and trunk, amphibian reactions, and increased tone are facilitated. Contra-indications occur when tone is too high or low and when tonic reflexes are inhibited. Facilitation provides a need to move, waits for a response, is done slowly, uses tapping techniques, and is tailored to each child. Proper assessment of reflexes, patterns of posture and movement, muscle tone, contractures and deformities is needed so that the therapist knows what the child can and cannot do and what can be facilitated. Concurrent use of facilitation and inhibition is necessary for good results. (6 refs.) - R. D. Perkins.

University of Wisconsin
Madison, Wisconsin

275 Brown, Betty. Inhibition and facilitation as a basis for treatment. In: American Association on Mental Deficiency, & U. S. Public Health Service, Mental Retardation Branch. Role of Physical Therapy in

Mental Retardation. Proceedings of the Workshop for Physical Therapists held at the 90th Annual Convention of the American Association on Mental Deficiency, Chicago, Illinois, May, 1966, p. 21-30. Mimeographed.

The Bobath therapy techniques for the treatment of the cerebral palsied are described in terms of the facilitation of speech in the retarded child. The goal of this therapy is to promote movements by suppression of abnormal reflex activity so that movements can be made in a normal manner and reinforced by sensory feedback so that coordinated movements may be facilitated. Speech is considered a motor performance monitored and modified by feedback via auditory, tactile, and kinesthetic pathways. Abnormal muscle tone will present difficulty in handling the speech process. However, abnormal motor function is not the inevitable correlate of retarded intelligence and may be only 1 of his communication problems. Treatment by the method of inhibition and facilitation may aid the retardate's learning of language because it frees him from the limitations of primitive reflex activity and promotes head control and mobility as well as allowing him to be more receptive to learning. The learning of movements should be directed to the patterned movements which are required for such performance. The timing of the procedures is a crucial variable and is based on his neurophysical development and maturation. The child who is considered retarded in motor and mental ability will probably show primitive speech behavior and marked language delay and will require considerable stimulation and reinforcement. The therapist should talk to the child as she works and explain what is being done. Speech and language are related to perception and movement. The physical therapist builds these functions and her work precedes the work of the speech therapist. This experience should involve a dynamic and inter-active process. (No refs.) - B. Bradley.

Speech and Hearing Center
University of Wisconsin
Madison, Wisconsin

276 Goldberg, I. Ignacy. The challenge of mental retardation to the physical therapist. In: American Association on Mental Deficiency, & U. S. Public Health Service, Mental Retardation Branch. Role of Physical Therapy in Mental Retardation. Proceedings of the Workshop for Physical Therapists held at the 90th Annual Convention of the American Association on Mental Deficiency, Chicago, Illinois, May, 1966, p. 48-53. Mimeographed.

MR in the United States is an extensive health, education, and welfare problem. Confusion as to its extent exists because of problems in differing central nervous system defects stemming from emotional and environmental causes. Traditionally, MR was an institutional problem where individuals with non-organic difficulties received the most attention. Social problems caused by MR led to life segregation with sterilization suggested as a solution. In 1963 the President suggested prevention, community services, and research to mitigate the lot of the neglected MR. Various disciplines view MR differently. To some, MR means sub-average intellectual function originating developmentally and associated with an inability to meet social demands. Habilitation is interpreted as an integration of services, including physical therapy, leading to absorption of MRs into society as productive social beings. It should take into consideration the value of the MR, his assets and membership into society, comprehensive treatment, and the responsibility of society. (No refs.) - G. Trakas.

Teachers College
Columbia University
New York, New York 10027

277 Blumenthal, Edna. Group parent counseling. In: American Association on Mental Deficiency, & U. S. Public Health Service, Mental Retardation Branch. Role of Physical Therapy in Mental Retardation. Proceedings of the Workshop for Physical Therapists held at the 90th Annual Convention of the American Association on Mental Deficiency, Chicago, Illinois, May, 1966, p. 60-64. Mimeographed.

The parents of cerebral palsied infants of an outpatient clinic hold informal monthly meetings to discuss common problems, display equipment which they had improvised for their child, and become more informed about cerebral palsy by inviting guest speakers. Under the direction of the staff of the North Carolina Cerebral Palsy Hospital, the meeting provides indirect counseling allowing the parents to develop insight into their problems by ventilating their feelings, receiving

support from other parents with similar problems, and recognizing their role with the normal family siblings. (No refs.) - L. Clevenger.

North Carolina Cerebral Palsy Hospital
Durham, North Carolina

278 Dignan, Peter. Inter-professional relationships in developing community resources. In: American Association on Mental Deficiency, & U. S. Public Health Service Mental Retardation Branch. Role of Physical Therapy in Mental Retardation. Proceedings of the Workshop for Physical Therapists held at the 90th Annual Convention of the American Association on Mental Deficiency, Chicago, Illinois, May 1966, p. 65-69. Mimeographed.

Meaningful planning for the handicapped, including the MR, necessitates broad continuous comprehensive programs. Facilitation of this is obtained through the mediation of interprofessional relationships in early case finding, prevention, proper treatment, habilitation, rehabilitation, education, and vocational guidance. The appropriate services should aid in the structuring of community resources for the handicapped to help alleviate the duplication of services. Procedures at the Children's Neuromuscular Diagnostic Clinic in Cincinnati, Ohio begins with parent contact through a social worker. The pediatrician conducts the physical examination and makes recommendations regarding other kinds of data needed. A psychological evaluation is given routinely. Other disciplines are consulted as needed and, ultimately, a prognosis with recommendations is made to the parents. The social worker follows up the recommendations. Summaries are sent to those involved. The team-effort concept can work if the varied professions will acknowledge their strengths and weaknesses. One shortcoming of the team method from the psychological view is that teams eventually begin to think as a group rather than each giving individual information. (No refs.) - G. Trakas.

Children's Neuromuscular
Diagnostic Clinic
295 Erkenbrecher Avenue
Cincinnati, Ohio

279 Yale, Harriet. The role of the physical therapist in stimulating neuromuscular development and behavioral patterns. In: American Association on Mental Deficiency, & U. S. Public Health Service, Mental retardation Branch. Role of Physical Therapy in Mental Retardation. Proceedings of the Workshop for Physical Therapists held at the 90th Annual Convention of the American Association on Mental Deficiency, Chicago, Illinois, May, 1966, p. 70-75. Mimeographed.

An activity program developed for SMR adults and children at the Mansfield Training School included goals of teaching, self-feeding, toilet training, encouraging physical activity, and developing the full potential of these patients. Activity leaders observed a group of children to help determine their potential for learning. With some, kinesthetic stimulation of the extremities was needed before teaching could begin. Volunteer high-school students came 3 days a week to play with the children and to help feed them. More children were added to the program as more help became available and as the children learned to adjust and play together. Feeding and toilet training programs were eventually successful. Principles used in working with this population were: (1) provide maximal stimulation; (2) be aware of the child as an on-going organism; (3) treat each child as an individual and try to develop his individual potential; and (4) be known to the community and its agencies. More research is needed in the area of physical therapy to discover new and better ways to apply neurophysiological mechanisms. (No refs.) - G. Trakas.

Mansfield State Training School
and Hospital
Mansfield Depot, Connecticut 06251

280 Hart, Gladys R. A physical therapy program for the mentally retarded in the public schools. In: American Association on Mental Deficiency, & U. S. Public Health Service, Mental Retardation Branch. Role of Physical Therapy in Mental Retardation. Proceedings of the Workshop for Physical Therapists held at the 90th Annual Convention of the American Association on Mental Deficiency, Chicago, Illinois, May 1966, p. 76-78. Mimeographed.

Physical therapists devised a school physical activity program based upon a survey of 17 special education classes of the Durham, North Carolina county and city school systems. The program included planned exercises, adaptive physical environment, increased motivation in group activity, and motor skills. A survey of comments made by special classroom teachers and observations by the physical therapists revealed that the children were uncoordinated in physical activities, disinterested in the work, hyperactive, physically weak, had short attention span, were

easily distracted, and evidenced shortcomings in self-care. Physical therapists are currently aiding teachers to administer programs to help improve motivation and level of performance. It is hoped that building a stronger self-concept will improve the MR's sense of independence which may allow him to better interact with his peers. A pilot project of this program will serve as a clinical experience for graduate students in the field of physical therapy. (No refs.) - G. Trakas.

Duke University Medical Center
Durham, North Carolina

281 Haynes, (Mrs.) B. Quincy. Functional integration of therapeutic modalities and the extendor role of the nursing team. In: American Association on Mental Deficiency, & U. S. Public Health Service, Mental Retardation Branch. Role of Physical Therapy in Mental Retardation. Proceedings of the Workshop for Physical Therapists held at the 90th Annual Convention of the American Association on Mental Deficiency, Chicago, Illinois, May, 1966, p. 79-89. Mimeographed.

Three case reports demonstrate how a nursing team, using operant conditioning techniques to care for severely and multiply handicapped infants, met the needs of the institutionalized Ss in a situation where the shortage of personnel was critical. A 3-month-old female with Moeburs syndrome was taught to suck using successive approximation and rewards empirically. By using similar techniques, a 3-year-old spastic paraplegic improved her feeding, positioning, and sitting. A chair was designed for her from directions given through correspondence with an expert. Visual, language, and social efforts produced increased responses. A 17-month-old microcephalic with cerebral palsy benefited from various exercises, a variety of auditory and visual stimuli, and operant conditioning. The nursing team concept may offer an approach worthy of further study and development in the provision of services for the severely multiply handicapped. (5 refs.) - R. D. Perkins.

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321 West 44th Street
New York, New York 10036

282 Slominski, Anita. Trends in adaptive equipment. In: American Association on Mental Deficiency, & U. S. Public Health Service, Mental Retardation Branch. Role of Physical Therapy in Mental Retardation. Proceedings of the Workshop for Physical Therapists held at the 90th Annual Convention of the American Association on Mental Deficiency, Chicago, Illinois, May 1966, p. 96-98. Mimeographed.

Bedfast, institutionalized MRs can progress from bed to wheelchairs, although the process is slow. Individual physiological differences must be considered. Beneficial equipment includes barrel-type seats with seat belts, built-up toilet seats, lapboards to provide rest for the elbows, and custom-made wheelchairs. Also, clothing can be adapted to suit special needs and textural toys can be made from scrap materials. (No refs.) R. D. Perkins.

Indiana University Medical Center
Indianapolis, Indiana

283 Peterson, Linda Whitney. Operant approach to observation and recording. Nursing Outlook, 15(3):28-32, 1967.

The operant approach to observation and recording provides a valuable tool in planning, evaluating, and refining nurse-patient relationships with MR children. Observations are made of existing patient-peer, patient-staff, or patient-parent interaction rather than reported behaviors. The observable interactions immediately preceding and following the specific behavior pattern of interest are those of special concern. Nurses begin with assessment of the child's functional level of development and analyses of daily care skills. Then 1 specific behavior pattern is selected for modification. This selection is based on the child's readiness or the behavior which is most difficult for the management of the child. A description is obtained of the specific antecedent and following events which occur with this behavior. Repeated observations are made to determine frequency of behavior and reliability of observations. Examples are given of recording forms and nursing procedures instituted to modify behavior. Children are rewarded immediately for desired behavior; inappropriate behavior is consistently ignored. A task is analyzed as a chain of steps taught separately. The teaching of a child with symptoms of hydrocephalus to drink from a straw is used to illustrate this procedure. (9 refs.) - B. Bradley.

Children's Research Center
University of Illinois
Urbana, Illinois

MISCELLANY

284 Lindholm, Olof. A clinical study of Esucos in a mentally retarded clientele. International Journal of Neuropsychiatry, 3(3):209-218, 1967.

The effect of Esucos (Dixyrazine), a chemical compound of promazine and hydroxizine, was studied in 35 EMR patients (CA, 6 to 47 years), using the double-blind cross-over control method. A favorable effect on symptoms of apprehension, anxiety and tension was verified at a significance level of 1 percent and with 18 preferential factors and, further, a certain degree of effect on hyperactivity of infantile type was found. Motoric agitation in patients with brain damage was not affected by the drug. However, the action of Esucos was favorable in cases of emotional tension and irritability. No side effects were noted during prolonged therapeutical periods of up to 1½ years and there was no tendency to habituation. The most common complication was increase in weight. (38 refs.) - (Source: IJNP)

Department of Psychiatry for
Children and Young People
Sundsvall, Sweden

285 Margolis, Frederick J., Nagler, Robert C., & Holkeboer, Paul E. Short-term fluoride excretion in young children. American Journal of Diseases of Children, 113(6): 673-676, 1967.

A study of fluoride excretion following known fluoride intakes in 24 institutionalized mongoloid boys showed that a single daily dose of fluoride is retained in the body as long as multiple doses in water. The Ss were 1 to 4 years of age and all in good health. The water supply at the institution was substantially free of fluoride. Baseline analyses of fluoride excretion in 12 Ss were within 5 percent of the known intake value. Fluoride was analyzed from 2- to 3-day urine and feces collections. Fluoride was administered in different ways: (1) 2 mg of fluoride in water over an 8-hour period; (2) a single 1 mg dose in a vitamin preparation; (3) 2 mg in a tablet; (4) 4 mg in water over a 12-hour period; and (5) a single 4 mg dose in a liquid vitamin preparation. When fluoride was given in water over a period of several hours the initial excretion of fluoride was delayed somewhat; however, the values for the entire collection period were nearly identical. The percent excreted varied between 30 and 50 percent. Little difference was found in percentage excreted between the 2 and 4 mg dose. Patients taking their fluoride in vitamin preparations consistently excreted less fluoride but the significance and reason for this is unknown. Excretion of fluoride levels off to a moderate uniform degree after 12 to 24 hours from intake. (10 refs.) - R. Froelich.

2901 South Westnedge Avenue
Kalamazoo, Michigan 49001

286 Baernstein, H. D., Jr., Quilligan, J. J., Jr., Alena, Barbara, & Axtell, Shirley. Accidental secondary vaccinia of the tongue. Clinical Pediatrics, 6(7):435-437, 1967.

Accidental secondary vaccinia of the tongue is described in a 5-year-old institutionalized mongoloid boy who apparently applied his protruding tongue on the recent vaccination of another child. Shortly after a primary vaccination the patient developed an upper respiratory infection and serological study showed an adenovirus infection. Ten months later he developed a moderate fever, 2 large vesicles appeared on his tongue, and the anterior cervical nodes became enlarged. Virus samples were taken and were identified by inoculation into chick embryos as vaccinia. The vesicles became clean shallow ulcers which healed within 10 days. An upper respiratory infection accompanied the episode and recurred 1 month later. The accidental vaccination probably occurred 1 to 2 weeks before when he was in the same room with a recent vaccinee. Sera from the institutionalized population group and from the patient during his 2 illnesses were tested against the patient's HeLa-grown vaccinia virus which showed a rise for the latter 2 specimens. The stored sera from 10 months before confirmed that the tongue lesion was secondary vaccinia. (6 refs.) - R. Froelich.

Loma Linda University School
of Medicine
Virus Laboratory
Loma Linda, California 92354

287 Petre-Quadens, O., & Jouvet, M. Étude des troubles du sommeil et de l'activité onirique chez les débiles mentaux. (The study of sleep disorders and sleeping activity in the mentally defective.) Revue Neurologique, 115(3):530, 1966.

One hundred EEG tracings from 5 groups were taken during sleep with special attention to

muscle tone activity in the chin and suprahyoid muscles and to possible dissociation with the stages of sleep. The groups were divided into 7 normal children ages 15 years or less; 8 mongoloids ages 15 years or less; 11 mental defectives ages 15 years or less; 20 normal adults; and 29 mental defective adults. Results revealed small increase in the percentage of "P.M.O.'s" in the mongoloids and mental defectives compared to normal children. In addition, mongoloids showed hypotonia during sleep. Adult mental defectives showed a significant decrease in the level of sleeping activity. Diminished total sleep time was noted along with hypotonia in stages 1 through 4. (No refs.) - W. Asher.

No address

288 Genetics of Hirschsprung's disease. New England Journal of Medicine, 276 (3):181-182, 1967. (Editorial)

Recent reports indicate that 3.6 percent of patients with Hirschsprung's disease had affected sibs; female patients had a higher incidence of affected sibs than male. Questions of mode of inheritance, environment, and chromosomal abnormality remain unanswered. The association of the disease with trisomic Down's syndrome is of great interest; however, the assumption that the development of intestinal ganglion cells is controlled by the small acrocentric chromosome is speculative. (4 refs.) - A. Clevenger.

289 Capp, Grayson L., Rigas, Demetrios A., & Jones, Richard T. Hemoglobin Portland 1: A new human hemoglobin unique in structure. Science, 157(3784):65-66, 1967.

A new hemoglobin (Hb), Portland 1, has been found in a newborn infant having multiple congenital anomalies and complex autosomal chromosomal mosaicism. The new hemoglobin has a unique tetrameric structure (molecular weight, 66,000) composed of two pairs of different types of chains, neither of which is alpha, $gamma_2chi_2$. The chi-chain of Hb Portland 1 may be a new type of hemoglobin chain, but the available evidence suggests that it may be identical with the epsilon chain. Hb Portland 1 may be an embryonic hemoglobin that persisted until after birth in relatively large amounts in this patient. (13 refs.)-(Source: Science)

Division of Experimental Medicine
University of Oregon Medical School
Portland, Oregon 97201

290 Brent, Robert L. Medicolegal aspects of teratology. Journal of Pediatrics, 71(2):288-298, 1967.

The unique problems of medicolegal teratology in discouraging unwarranted litigation and supporting justifiable complaints will require active participation of legal, medical, national, and state resources to be adequately resolved. The question of who can be the plaintiff has not been fully resolved. An abortus cannot bring suit although the parents can. The question of who is the defendant is in greater doubt with the possibility that the physician, industrial firm, drug company, parent, or lay person will be held responsible. No one area of medicine is fully prepared to consult for expert testimony which is further complicated by the large number of congenital abnormalities that are caused by unknown, uncertain, or more than one factor. Embryological dogma has to be discarded for this reason and each case has to be evaluated individually. The usual requirements of medicolegal guilt must be proven to establish guilt in these cases. A table of definite, probable, improbable, or no relationship between teratogenesis and the environmental occurrence is given. The concept of a medicolegal work-up and the prevention of medicolegal problems are discussed. (112 refs.) - R. Froelich.

Department of Pediatrics
Stein Research Center
Philadelphia, Pennsylvania

291 Hazards of drug prescribing in pregnancy. British Medical Journal, 3(5559):220-223, 1967.

The teratogenic or toxic effects of drugs in pregnancy are largely unknown which should make the prescribing of drugs in pregnancy a very careful matter. In normal pregnancy there is little need for drugs and they should be prescribed only when their need is clearly indicated. The dosage and timing should be recorded. Since an unknown pregnancy may be present in women of child-bearing age, these individuals should not be given potentially hazardous drugs without careful consideration of this aspect. Many common agents such as aspirin, caffeine, penicillin, sulfonamides, and nicotine and others have been shown to be teratogenic in animals but have not yet proven to be so in humans. Drugs also have a pharmacological action on the fetus since the placental barrier is "largely a myth." Morning sickness and other common symptoms during pregnancy can be dealt with without using drugs. Sedatives and tranquilizers other than thalidomide have not been shown to be teratogenic in

humans but if given prior to delivery can depress the infants. Treatment of infectious disease, cardiovascular disease, and diabetes in pregnancy are reviewed. Protein-bound drugs such as salicylates, sulfonamides, and others may compete with bilirubin and cause hyperbilirubinemia in infants. (7 refs.) - R. Froelich.

292 Runner, Meredith N. Comparative pharmacology in relation to teratogenesis. Federation Proceedings, 26(4):1131-1136, 1967.

Teratogenesis requires the administration of a specific treatment in a particular dose to a genetically susceptible animal during the critical period of development. It can be considered as toxicity to the developing fetus. Several different agents often produce the same malformation and a single agent may cause multiple defects in a variety of organs and tissues. Defect production depends on the genetic setting in which the agent is administered. Depending on their mode of action, 2 or more agents administered concomitantly may have protective, additive, or synergistic effects. On the basis of experimental studies in other species, prediction of teratogenecity, if based on biochemical mechanism of production, can be done for man. (49 refs.) - W. A. Hammill.

University of Colorado
Boulder, Colorado

293 Alexander, George J., Miles, Bruno Ed., Gold, George M., & Alexander, Rita B. LSD: Injection early in pregnancy produces abnormalities in offspring of rats. Science, 157(3787):459-460, 1967.

One of 5 rats given a single subcutaneous injection of lysergic acid diethylamide (LSD) early in pregnancy appeared to abort early, 2 delivered stunted stillborn offspring at term, 1 delivered a litter of 7 healthy and 1 underdeveloped young, and the last delivered an apparently normal litter. All 5 matched controls, given saline injections, went to term and delivered healthy litters of 11 to 16 offspring; there were no abortions and no stillbirths. In a replicate experiment, 1 of 5 rats given LSD on the 4th day of gestation aborted, 2 delivered some stillborn offspring, 1 gave an abnormally small litter of 4, and the last produced an apparently normal litter of 10. All matched controls delivered healthy litters, totaling 66. Some surviving offspring treated with LSD failed to develop as well as control animals. Treatment of 5 additional rats with LSD late in pregnancy had no obvious effect on the offspring. (6 refs.) - (Source: Science)

Neurotoxicity Research Unit
New York State Psychiatric Institute
New York, New York 10032

294 Heiskanen, O., Galicich, J. H., & Matson, D. D. The effect of dilute silver nitrate and silver protein solutions on the spinal cord and nerve roots. An experimental study on rabbits. Developmental Medicine and Child Neurology, 9(3):281-286, 1967.

Silver nitrate, even in solutions as dilute as 0.05 percent, is damaging to nervous tissue. Ten pairs of rabbits (6-8 weeks old) matched for litter, sex, and weight, had lumbar laminectomies and caudal perfusion. Either sterile saline (control animal) or 0.5 percent silver nitrate (experimental animal) was given continuously for 4 hours. None of the control animals had nerve injury at autopsy. All of the treated animals treated with 0.5 percent silver nitrate had severe damage and died at 3 and 5 days after treatment. Silver nitrate in bactericidal concentrations is damaging to nerve tissue and should not be used to maintain sterility of denuded myelomeningocele. (5 refs.) - W. A. Hammill.

Neurosurgical Clinic
Topeliuksenk 5
Helsinki, Finland

DEVELOPMENT--PHYSICAL, EMOTIONAL, AND SOCIAL

295 Keogh, Barbara K., & Keogh, Jack F. Pattern copying and pattern walking performance of normal and educationally subnormal boys. American Journal of Mental Deficiency, 71(6):1009-1013, 1967.

Thirty-nine educationally subnormal (ESN) boys, IQ, 51 to 77, CAs 9 and 10 years, were compared with 84 normal school boys ages 6 through 9 on ability to copy four simple line patterns by drawing and walking. ESN subjects were similar to 6-year-olds on both tasks, and were significantly worse than all other age groups. No differences between walking and drawing ability were found for

the normal boys, but the ESN subjects were significantly poorer in ability to walk than to draw the patterns. The objective scores and the subjective observations of performance suggest that the ESN boys had extreme difficulty in organizing their gross movements to represent patterns in a larger spatial field. (7 refs.) - (Source: AJMD)

University of California
Los Angeles, California 90024

296 Berkson, Gershon. Aspects of a comparative psychology of mental deficiency. American Journal of Mental Deficiency, 72(1):10-15, 1967.

Research with animals which concentrates on developmental defects has been concerned mainly with the effects of early alteration of the physiological and social environment on learning or emotionality in adulthood. Behavior of the developing animal has been of less interest. Widening the scope of animal research to include detailed analyses of postnatal maturation sequences, abnormal behaviors similar to those seen in abnormal humans, and the study of social relationships in animal groups containing defective animals would add significant dimensions to the comparative study of defects. (8 refs.) - (Source: AJMD)

Delta Regional Primate Research
Center
Covington, Louisiana 70433

297 Donoghue, E. C., & Shakespeare, R. Age of teething in retarded children. Developmental Medicine and Child Neurology, 9(3):299-302, 1967.

The age at the appearance of the first tooth is the same in normal as in MR Ss. Thirty MR Ss (IQ<40) were compared with 30 normal Ss for birth weight, walking, talking, clean habits, and use of spoon. All MR Ss were delayed in the usual developmental milestones, but did not differ in birth weight or age of teething. Dental eruption is of no value in predicting mental subnormality. (13 refs.) - W. A. Hammill

Queen Mary's Hospital for Children
Carshalton, Surrey
England

298 Egg-Benes, Maria. Les handicapés mentaux grandissent aussi. (The mentally handicapped grow up also.) Amentia, 11 (March):10-13, 1967.

Mentally handicapped individuals grow up with much the same developmental problems as normal teenagers. Mental defects sometimes affect physical maturation causing late or no sexual maturation. The widely accepted misconception that mental defectives have stronger sexual emotions than normals is the result of their poor moral training and failure to establish good habits. Many MRs fortunately are unable to correlate sexual feelings at puberty with attraction to the opposite sex. Sex education should begin at an early age to explain processes such as menstruation but explanation of marriage, pregnancy, and child bearing should be avoided to preclude preoccupation with these processes. Working in a professional activity will assist in integrating the MR into society and help to preserve their human dignity. (No refs.) - W. Asher.

Heilpädagogische Hilfsschule
de la Ville de Zurich
Zurich, Switzerland

299 Malin, Arthur John. Handedness and mental retardation. Journal of Rehabilitation in Asia, 8(3):39-40, 1967.

An evaluation of Doman and Delacato's neurological organization is offered implying that laterality testing would indicate the need for unilateral therapy. Research has been contradictory, and questions with regard to sampling techniques in clinical versus non-clinical research are raised. Success of the clinics which emphasize neurological organization indicates that the technique is useful, provides hope for patients with speech problems and aphasia, and therefore, warrants attention. (3 refs.) - C. A. Pepper.

No address

300 Simon, G. B. Sensory handicap, development and mental retardation. Teaching and Training, 5(2):40-46, 1967.

A child suffering from a sensory handicap will be subject to sensory deprivation unless he is aided in overcoming his handicap. Sensory deprivation will ultimately lead to a slowing of development in some spheres. It may result in general intellectual retardation (MR). Methods should be developed for

use with the child with a very mild or obscure type of sensory deficiency to ensure early detection and referral. Classification of these disorders should initially be based on an attempt to discover a child's basic difficulties and overcome them practically. A child suffering from sensory deprivation, if it is untreated, is frustrated and lacks confidence. Expression of these feelings may take a variety of forms. The primary objective must be to produce in the child the desire to co-operate. Techniques vary. They depend largely on the personality of the adults involved. As mobility, environmental contact, and ability to communicate increase, all available methods must be used to stimulate the full use of all remaining sensory functions. (4 refs.) - M. E. McKee.

No address

301 Guess, Doug. Mental retardation and blindness: A complex and relatively unexplored dyad. Exceptional Children, 33(7):471-479, 1967.

It is difficult to identify the blind mentally retarded (BMR) but surveys suggest the prevalence of BMR is lower in institutions for MR than in facilities for the blind. Observable characteristics of BMR include: speech (partially verbal), motor development (weak-flaccid), autoerotic behavior (stereotyped blind mannerisms), emotional behavior (dependent-passive), and cognitive behavior (gross disorders on intelligence tests). Theoretical interpretations of their behavior are the psychoanalytically oriented ego impairment and emphasis on the family surroundings with parent confusion as to the proper training. According to authorities treatment should include: stable environment; educational programs of management, academics, and motor development; and social adjustment. More research and better instruments are needed to assess the BMR's academic, social, and emotional characteristics. Presently adequate service to the BMR is lacking. (40 refs.) - G. Trakas.

Kansas Neurological Institute
Topeka, Kansas

302 Guess, Doug, & Rutherford, Gorin. Experimental attempts to reduce stereotyping among blind retardates. American Journal of Mental Deficiency, 71(6):984-986, 1967.

Stereotyping rates among blind mental retardates were observed under experimental, ward, and control conditions. The experimental conditions included: (1) sounds, (2) objects, and (3) sound-generating apparatuses. The sample included 13 ambulatory blind retardates with a CA range from 8 to 16. The introduction of objects and sound-generating apparatuses significantly reduced the stereotyping rates for these Ss below those rates found for the ward, control, or sound conditions. A reciprocal relationship was demonstrated between stereotyping rates and object manipulation scores. (4 refs.) - (Source: AJMD)

Kansas Neurological Institute
3107 West 21st Street
Topeka, Kansas 66604

303 Kay, Carol Lynn, & McKinney, John Paul. Friendship fluctuation in normal and retarded children. Journal of Genetic Psychology, 110(2):233-241, 1967.

Eighty-nine MR and 223 normal individuals (CA, 10 to 18 years) tested for friendship stability demonstrated a significantly greater friendship fluctuation for the MR child than the normal child but a similarly decreasing fluctuation with increasing age for both the normal and MR child. The Ss were asked to name their 3 best friends in order of preference and were again asked to do this 18 or 19 days later. Friendship fluctuation was the index measuring the amount of changes in friendship preference. All Ss were from private boarding schools. The IQ range for the MRs was 45 to 85 and for the normals 104 to 145. Previous evidence has shown that friendship stability increases with social maturity. This study provides further evidence that a relationship exists between social and intellectual development but does not support the theory that MRs have more cognitive rigidity. The data suggest qualitatively similar social development for normal and MR children. (24 refs.) - R. Froelich.

School for Social Welfare
University of California
Berkeley, California 94720

304 Temerlin, M. K., Trousdale, W. W., La Crone, H. H., Harrison, C. H., & Rundell, O. H. Effects of increased mothering and skin contact on retarded boys. American Journal of Mental Deficiency, 71(6):890-893, 1967.

Hypothesizing a differential effect of mothering and skin contact on social behavior, 32

non-verbal, institutionalized SMR males (median CA, 9 years) were divided into 4 groups. Each group received either active mothering from an attendant wearing a standard white, sleeveless uniform; active mothering from an attendant wearing a long-sleeved, plastic raincoat and surgical gloves; passive mothering from an attendant wearing a standard white sleeveless uniform; or passive mothering from an attendant wearing a plastic raincoat and surgical gloves. Pre- and post-experimental measures of social behavior indicated no superiority of either skin contact or mothering in producing desirable behavior. (8 refs.) - (Source: AJMD)

Department of Psychology
University of Oklahoma
Norman, Oklahoma

305 Doman, Andrea. Appraisal of emotionally incongruous situations by mental retardates of differing mental ages. Journal of General Psychology, 77(1):131-143, 1967.

The Emotional Incongruity Test was used to investigate the effects of intellectual ability and CA on the ability of MR Ss to find reasonable explanations for the emotions and feelings of others. Ss were 105 institutionalized MRs (65 boys, 40 girls; mean CA, 14 yrs, 4 mos; mean IQ, 60.38). They were divided into 7 MA groups: 3-4, 5, 6, 7, 8, 9, and 10. Test pictures were presented singly in 3 rounds. Responses were independently scored for perceptive accuracy and rationalization. Ss personal feelings were checked for projection, good reality, and justified and unjustified introjection qualities. Statistical tests used in data analysis included Hartley's test for homogeneity of variance, the Kruskal-Wallace one-way analysis of variance, the Mann Whitney U test, and Kendall's tau. Both perceptive accuracy and rationalization ability improved significantly as MA and CA increased. Correlations between MA and perceptive accuracy were considerably larger than those between CA and perception. Growth in perception and rationalization ability was characterized by steady increase in accurate response patterns and by steady decrease in inaccurate patterns. Developmental steps in this continuum appeared to be accurate perception, recognition of conflict, and adequate explanation of the feelings of the main figure. Improvement in successful emotional incongruity problem solution reached a peak with the 9 MA group and no improvement after this age was noted. A comparison with a normal population will need to be made in order to evaluate whether these reactions are universal or are characteristic of MRs. (15 refs.) - J. K. Wyatt.

Community Mental Health Center
4100 W Street N. W.
Washington, D. C. 20007

306 McConnell, Owen L. Personality correlates of responsiveness to social reinforcement in mental retardates. American Journal of Mental Deficiency, 72(1):45-49, 1967.

Relationships between responsiveness to social reinforcement (RSR) and personality variables were investigated in cultural familial retardates. RSR was assessed using a 2-hole marble-dropping task in which E differentially reinforced S's responses with "good" or "bad." Retardates readily influenced by reinforcement were matched with unaffected Ss. All Ss were administered 12 Thematic Apperception Test cards. RSR Ss had more affiliation imagery, statements of affect, and nurturance themes. These traits may originate from conditions producing RSR. RSR Ss also showed a greater desire to foster socially desirable behaviors, more anxiety about aggressing, and better school achievement. These attributes may be consequences of RSR. (6 refs.) - (Source: AJMD)

Department of Psychology
University of North Carolina
Chapel Hill, North Carolina

307 Ferguson, Janet T. The use of social group work to prepare residents for community placement. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 22 p. Mimeographed.

A 15-month period of social group work (SGW) was successfully used to prepare 6 mildly and moderately MR institutionalized females (CAs, 43-59; IQs, 39-70) for community placement. Participation in the program was voluntary and Ss were aware that they were being prepared for life outside the institution. The program emphasized behavior modification and change and the development of problem-solving techniques. Group goals included the development of increased self-acceptance and awareness, behavior understanding and control, improved appearance and manners, friendship relationships, the ability to plan and make decisions, coping abilities, a socially acceptable role in relation to men, and familiarity with community environment and living outside the institution. In addition

to group goals, individual goals, determined by specific needs, were established for each S. SGW centered around the use of group and individual discussion sessions, group program activities, institution and community resources, and volunteers. In addition to dealing with the problem of MR, SGW dealt primarily with emotional problems that seemed to have originated in the atmosphere created by the institution milieu. An emphasis was placed on the development of individual strengths and on awareness of limitations. These were taken into consideration when Ss were placed in the community. Community adjustment of the Ss has not been completely smooth, however, there is evidence that growth patterns developed during SGW treatment have been of obvious help during difficult periods and are continuing to develop. SGW has been valuable in diagnosis, behavior modification, and emotional and social problem-solving. (2 refs.) - J. K. Wyatt.

Fort Custer State Home
Augusta, Michigan

308 Cleland, Charles C., Patton, William F., & Seitz, Sue. The use of insult as an index of negative reference groups. American Journal of Mental Deficiency, 72(1): 30-33, 1967.

The use of the verbal insult projected by institutionalized retardates was explored as a possible index of negative reference groups. A hypothetical situation was designed in which retardates from 5 geographical regions in Texas were asked to insult someone who had made them angry. The insults of 316 retardates (CA, 12 to 18 years) were placed in categories and compared with insults obtained from 112 business school students. The most common insults of the retardates related to the intelligence of the hypothetical object of the insult, while the comparison group favored attacks on the object's character. (13 refs.) - (Source: AJMD)

University of Texas
2410 San Antonio
Austin, Texas 78705

309 Bialer, Irv. Psychotherapy and other adjustment techniques with the mentally retarded. In: Baumeister, Alfred A., ed. Mental Retardation: Appraisal, Education, and Rehabilitation. Chicago, Illinois, Aldine Publishing, 1967, Chapter 7, p. 138-180.

Present research evidence indicates that psychotherapeutic practices are useful in treating some MR children. Psychotherapy uses planned psychological techniques to bring about more effective behavior and personality adjustment. The goals are IQ change, emotional or behavioral adjustment, and environmental modification. In spite of methodological differences, the various successful schools of psychotherapy possess a core of common attributes. These include: (1) a person seeking help; (2) the establishment of client-therapist interaction and relationship; (3) the use of the personality characteristics of the therapist to facilitate client growth; (4) the provision of safe opportunities for client expression of feelings; (5) the use of a set of techniques by the therapist; and (6) the initiation of positive behavior changes. Empirical evidence indicates that directive techniques are most effective with MRs. Verbal methods should be used with older, higher level MRs. Psychotherapy with MRs should be designed so that a large amount of nonverbal interaction can occur. Definitive research on the effectiveness of the various psychotherapeutic approaches is needed. Other adjustment techniques used with MRs are social work therapy, pastoral counseling, remotivation therapy, occupational therapy, music therapy, and art therapy. (135 refs.) - J. K. Wyatt.

Kennedy Child Study Center
151 East 67th Street
New York, New York 10021

310 Leland, Henry, & Smith, Dan. Manipulation of structure as the keystone of the therapeutic process with retarded children. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 7 p. Mimeographed.

Maladaptive behavior in MR children can be shaped and modified by manipulating the level of structure present in the psychotherapeutic situation. Psychotherapy can be used to reverse maladaptive behaviors and to teach children to successfully cope with their environments. In order to develop a specific plan for each child, the therapist needs to be aware of the child's cognitive style and of his specific maladaptive coping behaviors. Varying structural levels are used as cognitive controls in order to shape new behavior. The therapy should attempt to teach the child to cope with those life situations which are difficult for him and in doing this should try to duplicate the kinds of structural controls present in his life situation. (3 refs.) - J. K. Wyatt.

Parsons State Hospital and
Training Center
Parsons, Kansas

311 Shulman, Lawrence. Interpersonal strategies of the mildly retarded: A game model view. Paper presented at the 91st meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 13 p. Typed.

The principles of game model theory as developed by Szasz and Berne were used to analyze the interaction of mildly retarded adolescent male Ss and staff personnel in an institution. A game involves a complex pattern of interaction, a set of rules, players who take on roles, and a hidden pay-off. The motivation involved in the game is important and is usually hidden. The belief which underlies this theory is that man, when made aware of his involvement in a game, can use his powers of freedom and responsibility to develop new "game-free" patterns of behavior. One of the core problems of living for all men is the dominance-submission question. This problem is accentuated for the institutionalized MR. The mildly MR individual may cope with institutional environment by adopting the role of the retarded or playing a game that makes his MR appear greater than it is. Two situations are cited in which game analysis and a subsequent change in staff behavior were used to bring about changes in the interpersonal strategies of MR Ss. (10 refs.) - J. K. Wyatt.

Graduate School of Social Work
University of Pennsylvania
Philadelphia, Pennsylvania

312 Rendle-Short, J. Infantile autism--the second stage. In: Australian Group for the Scientific Study of Mental Deficiency. Proceedings of the Fifth Annual Interstate Conference on Mental Deficiency, Van Pelt, J. D., ed. Brisbane, Australia, October 1966, p. 11-18.

Since infantile autism can be diagnosed accurately and confidently, the available information must be correlated to gain insight into etiology in order to better effect treatment and prevention. Well-defined etiological factors are the age of onset (less than 3½ years), and the two basic types of autism--congenital and acquired with acquired resulting after some event usually involving a brain insult. Environmental factors (parental emotional make-up and intelligence and socio-economic background) are less likely to be involved. The basic defect seems to be in utilization or sorting of stored memory so that it either cannot be used or is used inappropriately (analagous to the metabolic pathways seen in enzyme defects). The secondary effects of this defect result in frustration behavior or lack of security. Surgery, shock therapy, and dietary therapy have been of no value. Drug therapy offers promise from the early results with L.S.D. Education and training must be directed to the defect with constant patient repetition and rechanneling or repression of the inappropriate responses. (No refs.) - W. A. Hammill.

University of Queensland
Brisbane, Australia

313 Edgerton, Robert B. The Cloak of Competence. Berkeley, California, University of California Press, 1967, 233 p. $5.75.

An anthropological investigation of the social and cultural adjustments of mildly retarded adults who have been discharged from an institution is described. No formal critiques of existing programs are presented but rather the focus is upon major problem areas. Detailed case histories to represent typical modes of living include: (1) a retarded man, married to a retarded woman, (2) a single retarded man with a relatively high degree of competence and a complex mode of life, (3) a single, very limited retarded woman existing in a poor environment, and (4) a retarded woman married to a normal man. A general overview of the critical factors and concerns of the 4 retardates is included. Problems affecting self-esteem for the retardate in his social adjustment to the community are discussed in detail. The label of mental retardation is rejected by ex-patients as being totally unacceptable. As for employment, satisfactory work attitudes are a major problem. The stigma of the classification of mental retardation is a major factor in attempts to "pass" as normals. The role of the benefactor is carefully analyzed. This role involves the assistance of normal people. This study should be of benefit to those involved in vocational training, placement, community services, and adult education. (85-item bibliog.) - B. Bradley.

University of California Press
Los Angeles, California

CONTENTS: The Study and Its Background; Detailed Portraits of Selected Persons; Some Central Concerns of "Life on the Outs"; Passing and Denial: The Problem of Seeming to be Normal; The Benevolent Conspiracy: The Role of the Benefactor; Stigma and the Cloak of Competence.

314 Baller, Warren R., Charles, Don C., & Miller, Ebert L. Mid-life attainment of the mentally retarded. (Genetic Psychology Monographs, Volume 75.) Provincetown, Massachusetts, Journal Press, 1967, p. 235-329.

The question of "what becomes of retarded children" was investigated by analyzing the present status and functioning of Ss originally studied in the 1930's. Three matched groups were formed with 206 Ss in each: the low group (IQ below 70, mean IQ of 61, and mean CA of 56 years); the middle group (IQ from 70-80, and mean CA of 53); and the high group (mean IQ of 107, and mean CA of 53). Sociological investigations of social status, interviews and/or pencil and paper questionaires giving life history data, and ability checks using intelligence tests were conducted. Socially, the low group, as contrasted with the other two groups, had a lower horizontal mobility rate, a higher mortality rate, and a lower rate for getting and keeping spouses; however, the low group compared favorably, though slightly lower, in degree of institutionalization, economic status, law conformity, and degree of social and recreational activity. In regard to ability, 65 percent of the low group improved intellectually by upgrading into the dull normal or average range whereas the middle and high groups made only slight gains. Life histories of the low group revealed a much lower incidence of rewarding experiences, such as having a mother at home--thus, revealing a dearth of positive early experience. "Most successful" low group Ss worked continuously for a paternalistic employer. Socialization, acculturation, schooling, vocational assistance, and the provision of significant persons is recommended for children early identified as MR. Continued study of these groups is needed as well as longitudinal study of retarded children and/or children who seem likely to be retarded. (33 refs.) - R. Grieger.

University of Nebraska
Lincoln, Nebraska

315 Giraud-L'Herbault, G. L'infirme mental et l'education sexuelle. (The mentally retarded and sex education.) Nos Enfants Inadaptes, quarterly review (special issue):18-19, 1967.

With proper education, the average retarded child can be persuaded of the wisdom of remaining single. Among the retarded, there are 3 levels of behavior. First is a group capable of certain friendships, but with no observable sexual drive. A second group has an awareness of the 2 sexes. The boys understand less than the girls, but even the girls are vague on the part of the man in conception. As boy friends and girl friends they send presents and write love letters, but they are not likely to have more than a transient interest soon taken by another. A third group has a more mature understanding of marriage and requires more careful supervision. These 3 groups have been helped in developing their personalities and in professions at their capabilities, but work is still to be done in the area of socialization. Proposed solutions to the problem include: sterilization and isolation. The retarded person is not as complicated as the normal person. He is a conformist, has little initiative, and is docile. Consequently, the educator should work a great deal with the person in the field of morals. One study has found no cases of successful marriages either for the partners or for the offspring. It is wise to lead the child progressively to the idea that marriage is not for him and at the same time to build him up in his own eyes as a celibate. (No refs.) - D. Bammel.

Ancien Interne des Hopitaux
de Paris
Paris, France

316 Furneaux, Barbara. The diary of Angela. Special Education, 55(4):21-25, 1966.

The progress of a mentally subnormal girl during a 2¼-year period on a special training unit in Great Britain is documented in a case report. The girl, Angela, was admitted at age 7 and described as hyperactive, uninterested and antisocial, and having very little speech. Intelligence testing indicated an IQ score of 48 on the Stanford-Binet Scale but this was considered to be a low estimate of her potential since she indicated some creative behavior. Angela was observed and her assets and liabilities were determined resulting in an increased emphasis upon her creativity. Simultaneously, attempts were made to improve her family environment and speech therapy was initiated. The major gain in communication occurred after 1 year when her speech was analyzed using tape recordings. At present, Angela has achieved a Verbal Quotient of 65 and Performance Quotient of 75 on the Wechsler Intelligence Scale for Children and her speech is intelligible to all staff and visitors. Her achievement on academic tasks is at the 5- to 6-year level and she can function in groups. Additional

training in the unit is recommended since progress has been excellent. (No refs.) - B. Bradley.

Lindens Unit
Epsom, England

317 Sharman, George. Do we "dehabilitate" the retarded? In: Australian Group for the Scientific Study of Mental Deficiency. Proceedings of the Fifth Annual Interstate Conference on Mental Deficiency. Van Pelt, J. S., ed. Brisbane, Australia, October 1966, p. 48-53.

A primary step in rehabilitating the MR is recognition and avoidance of excluding them from the community or dehabilitation. In society, norms are evolved with limits of tolerance. When these limits are exceeded, the deviants are excluded often either physically or by the modification of values contributing to the norm. Behavior is the interaction of an individual with the physical and social environment, thus appropriate behavior must be acquired by MRs in the community environment. They should share the same schools with modified curricula, the same responsibilities for task performance, and the same criteria for cooperation with others as other members of the community. Incorporation of the MR into the community from the beginning will help avoid dehabilitation. (No refs.) - W. A. Hammill.

Department of Education
Adelaide, South Australia
Australia

318 Maskell, F. Body image in immature children. Forward Trends, 2(2):81-85, 1967.

"The general development of the child cannot be separated from that of his sensori-motor development." Prematurely born children are conspicuously inferior in performance on Bergès and Lézine's Limitations of Gestures Test demonstrating thereby the importance of prematurity as a cause of retarded development. Left handed children also show below normal performance on this test. However, the links between prematures and left handers cannot be defined. Premature children are generally immature in the sense of being physically uncoordinated to some extent. Most immature children lack true knowledge and confidence in the body as a self. Kephart believes that certain sensori-motor exercises bring about a better body image which is reflected in the child's drawings of the human figure. Children must move and learn actively. Movement can produce a relative idea of "self" by strengthening some sort of internal communication which seems to influence mental operations. Play, movement, dance, or drama would also help in the formation of an intellectual image of self and thus form part of the physical basis of personality (3 refs.) - C. M. N. Mehrotra.

No address

LANGUAGE, SPEECH, AND HEARING

319 Webb, Clarence E., & Kinde, Stewart. Speech, language, and hearing of the mentally retarded. In: Baumeister, Alfred A., ed. Mental Retardation: Appraisal, Education, and Rehabilitation. Chicago, Illinois, Aldine Publishing, 1967, Chapter 5, p. 86-119.

Speech improvement planning for MR children should be centered around realistic goals adopted after the child's motivation, organic structure, history, co-ordination, environment, and intelligence level have been evaluated. MRs usually experience some developmental delay in language maturity. This delay is most pronounced in institutionalized MRs. Language disorder may be the result of organic deficit, developmental delay, or inadequate environmental stimulation. The largest category of speech disorder among MRs is articulation disorder. Other speech-involved disorders are voice, rhythm, and hearing disorders. Reported incidence of language, speech, and hearing problems is variable; however, in general, they range from 50-100 percent for language disorders, 80-100 percent for articulation disorders in institutionalized Ss and 25 percent in special-class public school Ss, and 25-50 percent for hearing disorders. Specific types of language, speech, or hearing problems are usually associated with the Sjogren-Larson syndrome, histidinemia, central nervous system disorders, post-encephalitic conditions, autism, phenylketonuria, and mongolism. Speech therapy approaches which have been successful with MRs include: formal skill training, communication centered methods, unit teaching, environmental approaches, and group speech improvement techniques. General goals for speech improvement in MRs should emphasize the improvement of the appropriateness of language, sentence length increase,

vocabulary building, syntax improvement, verbal output increase, and comprehension improvement. (161 refs.) - J. K. Wyatt.

University of South Florida
Tampa, Florida

320 Spradlin, Joseph E. Environmental factors and the language development of retarded children. In: Rosenberg, Sheldon, ed. Developments in Applied Psycholinguistics Research. New York, New York, Macmillan, 1966. Also presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 41 p. Mimeographed.

Language development in MR children is discussed in terms of how language is learned, the effect of environment on language development, and how environment can be improved to facilitate the learning of language. Research in the area of reinforcement, imitation, and shift of stimulus control is important since these behavioral concepts are necessary for language development. Ordinary reinforcers may not reinforce MR children. Social consequences have advantages in the development of verbal behavior of MRs. Imitation of sounds seems to be a basic step in language development and stimulus control through superimposition and fading has significant implications for the formation of language and concepts. One hundred fifty MRs retested after a 3-year-period of institutionalization showed little increase in language scores indicating that language development there was not pronounced. This is true because of the limited challenges and need for language, personnel shortages, and limited social or other reinforcements. The first step toward improvement of the situation is to shift the goal of institutionalization from custody to re-entry into the community. Verbal behavior should be accepted as desirable activity. Reinforcement situations and appropriate language models for imitation should be provided. (49 refs.) - R. Froelich.

Parsons State Hospital and
Training Center
Parsons, Kansas 67357

321 Gibson, Robert C. Effectiveness of the Peabody Language Development Program with a class of educable mentally retarded children. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 9 p, Mimeographed. (Abstract)

Special instruction using the Peabody Language Development Kit Level #1 did not add significantly to the language development of an experimental group of EMR children. Two groups of 13 MR public school children made up an experimental group (mean CA, 92.69 months; mean IQ, 75.61; mean LA score, 70.15) and a control group (mean CA, 93.84; mean IQ, 77.01; mean LA score, 70.84). The E group received special daily language instruction for a 6-month period. It was hypothesized that this instruction would effect significant increases in oral language ability, verbal intelligence, and academic school progress. Pre- and post-language tests were administered to evaluate language growth. There were 34 test and language sample variables. Assessment included the Illinois Test of Psycholinguistic Ability, the Peabody Picture Vocabulary Test, the Wechsler Intelligence Scale for Children, the Wide Range Achievement Test, still pictures, motion pictures, sound effects, and conversation. Although growth in a positive direction did occur, only 4 of the 34 variables reached the level of significance set for the study (.01). This experiment illustrates the feasibility of using a variety of stimuli within the experience level of the children in order to elicit verbal language from MR children. (31 refs.) - J. K. Wyatt.

Polk County Board of Education
Des Moines, Iowa

322 Silverman, Susan I. Speech and language therapy with hearing impaired, multiple handicapped mentally retarded children. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 12 p. Mimeographed.

The meaningful and worthwhile experiences obtained while treating hearing impaired, multiply handicapped MR girls for speech and language problems are described. The girls ranged in age from 9 to 60 years with MAs of 4 to 9 years and presented a variety of speech and language problems. The therapeutic goal was to stimulate and develop language skills in order to improve communication. Specific aims were to develop an awareness of auditory stimuli, to realize its meaning, and to use these meaningful stimuli. Ten girls were fitted with hearing aids. The children's abilities were evaluated repeatedly. Auditory training began with gross sound stimulation for identification, discrimination, and localization of sounds and

for sequencing and patterning of stimuli. Therapy was administered individually for 30 minutes a day. Sound stimulation was accomplished by the moto-kinesthetic approach. Breath control was important particularly for children with cerebral palsy. Gesture language and fingerspelling was encouraged. Visual, motor, and tactile stimuli were used and found helpful for communication. A number of mechanical instruments were used including film strips, record players, cameras, the Grason-Stadler auditory trainer, Maico desk aids, the Language Master, Montessori materials, Frostig programs, and others. The multisensory approach was much more workable with most individuals than the unisensory approach. (3 refs.) - R. Froelich.

North Jersey Training Schools
P. O. Box 215
Totowa, New Jersey

323 McCoy, Dan F., & Lloyd, Lyle L. A hearing aid orientation program for mentally retarded children. Training School Bulletin, 64(1):21-30, 1967.

A clinical Hearing Aid Orientation (HAO) Program for MR, institutionalized children (CA, 8-16 years; measured intelligence range of II or III; mild to severe hearing impairment) depends upon cottage personnel for follow-up and carryover and upon gradual development of instruction to the child. Contacts with cottage personnel include: discussion of the child's hearing impairment and previous therapy; procedures for helping the child; information about the HAO Program; instruction on assembling and care of hearing aids; and method of reporting the child's progress in the use of the aid. Step-by-step instructions are given for teaching the MR child the skills needed in using and caring for the hearing aid. Progress should be checked periodically with both child and cottage personnel. (13 refs.) - E. F. MacGregor.

Elgin State Hospital
Elgin, Illinois

324 Hubschman, Eva. Experimental language development program at the nursery. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 13 p. Mimeographed.

An 18-month program of daily language lessons resulted in significant increases in MA, IQ, social age, and SQ for 9 institutionalized, mongoloid children. Nine pairs of children were matched on sex (5 male, 4 female), CA (E group 40 months, control group 41 months), Cattell Scale IQ (E group 33.69, control group 31.61), and Cattell Scale MA (E group 12.67 months, control group 12.64 months). One child from each pair was randomly assigned to either the control group or the E group. All Ss were trisomy-21 mongoloids. All Ss observed the same daily routine, resided on the same ward, and received the same care. E group Ss took part in individual daily half-hour speech lessons. These classes were taught by specially trained speech aides and were designed to develop both language and fine motor skills. The classes also provided an opportunity for the E children to develop a close personal relationship with 1 adult. Behavior-shaping techniques and reinforcement procedures used in the speech classes were governed by the principles of operant conditioning. A specially developed Language Modalities Test was administered to all Ss at the end of 6 months and again at the end of 18 months. This test assessed language development in 6 areas: body image identification; identification of real objects, miniature objects, and photographs of environmental objects; visual decoding and matching; motor encoding; comprehension of commands; and echoic gestures. Test results at the end of 6 months revealed no significant differences between groups. At the end of 18 months the E group had made significant increases in scores over the control group on the Cattell Scale, the Vineland Scale, and the Language Modalities Test. (8 refs.) - J. K. Wyatt.

North Jersey Training School
Minnisink Road
Totowa, New Jersey

325 Engel, Rose C., Reid, William R., & Rucker, Donald P. Language Development Experiences for Young Children. Los Angeles, California, University of Southern California, 1966, 299 p. $2.95.

This monograph is concerned with specific language development experiences for young mentally handicapped children. The introduction provides a discussion of the development and acquisition of language and speech, retarded speech, and the role of the teacher. A chart indicating the pattern of normal language development for age levels from 1 month to 7 years is presented. Principles of learning applied to vocabulary and language patterns as well as the need for a multidisciplinary approach are discussed. The primary content of this source is a listing and description of detailed language activities relating to the major areas of the educational program. These materials and suggestions are presented in an outline form with a

well organized format which indicates the required material, procedures, and variations. The materials are primarily for mentally handicapped children but can be used for a variety of population groups in different environments. Source materials such as books for teachers and annotated reading lists for children are also included. A Developmental Progress Chart allows for evaluation of growth of children from 1-5 years in: posture and large movement, vision and fine movement, hearing and speech, and social behavior and play. (17 refs.) - B. Bradley.

CONTENTS: Introduction; Pattern of Normal Language Development; Experiences--Art, Cooking, Daily Procedures, Dramatic Play, Messy, Motor, Music, Science, Sensory, Story Time, Trips, Water Play, Other Small Group Activities; Books for Teachers; Books for Children; Appendix.

326 Fulton, Robert T. Speech and hearing programs for the mentally retarded: A model for personnel and facility justification. Mental Retardation (AAMD), 5(4):27-32, 1967.

In order to determine the personnel and facilities needed to conduct speech and hearing programs for MRs, program directors should: (1) assess the speech, hearing, and language needs of the population; (2) set up individual priorities for treatment and habilitation; (3) decide on the types of services to be provided and on the staff-patient ratio needed to provide them; (4) establish educational and experience qualifications for staff personnel; and (5) determine facility and equipment requirements. The basic model and formulas used as an example here can be adapted to fit the needs of any population. The application of systematic assessment methods provides: factual justification for program requirements, a basis for determining the services which can be provided if budgetary adjustments are required, and data which will make long-range planning possible. (3 refs.) - J. K. Wyatt.

Bureau of Child Research
University of Kansas
Lawrence, Kansas

327 Morency, Anne S., Wepman, Joseph M., & Weiner, Paul S. Studies in speech: Developmental articulation inaccuracy. Elementary School Journal, 67(6):329-337, 1967.

The decrease in the incidence of functional articulation problems with progression in age was investigated to determine if speech is acquired in a predictable developmental progression. Maturation differences in perception, motor functions, and modalities of learning are important in determining the wide age spread in the acquisition of articulation. The concept of age-appropriate speech is emphasized in contrast to the functional articulation defect. Children used as Ss were: (1) a control group of 160 normal children (40 each with CA's of 5, 6, 7, and 8 years) screened for hearing and speech problems and with Peabody Picture Vocabulary Test (PPVT) scores above 90 IQ; (2) 47 children from the same school community within the CA and IQ range of the normal group but with speech that was considered inaccurate; (3) 30 MR children (CA, 5-9 years, PPVT IQ 50-85); and (4) 30 Ss (CA, 5-9 years, PPVT IQ, 88-132) with cleft or short palates. The results indicated that the "normal" group made articulation errors in speech sounds which are usually acquired last by all children. The children with articulation problems committed similar errors. The MR children indicated a profile of many of the same errors but made more of them. Also errors were made throughout the speech spectrum. Profiles of normal and non-pathological groups appear similar in type. An additional analysis of the Wepman Auditory Discrimination Test was presented but the MR group could not follow the test instructions and were not included in the comparison. The use of specific modality training based on the child's best developed pathway for learning is suggested to aid in the improvement of articulation. (21 refs.) - B. Bradley.

University of Chicago
Chicago, Illinois

328 McLean, James. Therapy for retardates with communication disorders. Project News of the Parsons State Hospital and Training Center, 3(6):13-25, 1967.

Current activities of the Parsons Demonstration Project to develop improved therapy procedures for MR children with communication disorders are: (1) the validation of presently existing MR communication assessment and modification methodologies; (2) the development and validation of new clinical procedures; and (3) the development of better demonstration procedures. Methodological research is based on operant conditioning principles, psycho-linguistic findings, and interpersonal theory. New clinical programs specifically developed for MR children are used to develop imitative repertoires; improve auditory discrimination behavior; develop speech and language; modify articulation; assess hearing thresholds; and modify

dysfluency. Research on innovative clinical methodologies for MR children includes the development of programed procedures that combine speech-sound discrimination and phoneme articulation programs; the evaluation and assessment of generative language systems; the development of techniques for the use of Bekesy audiometry; the use of TV presentations to increase vocal behavior; and auditory training for the hard of hearing. Future demonstration innovations will center around demonstration conferences, communication with other research and clinical centers, the use of graduate student trainees, and the development of a library of videotaped demonstrations. The final goal of this project is the development of a large number of specific clinical programs which could be combined in a variety of ways to meet the specific needs of each MR child. (9 refs.) - J. K. Wyatt.

Parsons State Hospital and
Training Center
Parsons, Kansas

329 Wurtz, Conrad R., Zimmerman, Nathalia, Timmons, Nancy A., & Menolascino, Frank J. Central language disorders in childhood: Professional communication and management problems. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 27 p. Mimeographed.

Central language disorders (CLD) in childhood are discussed in terms of diagnostic parameters, management recommendations, a case history, and communication problems with the specialized personnel who are necessary for implementing treatment. The differential diagnosis of CLD includes minimal cerebral dysfunction, severe hearing loss, MR, and functional psychosis. The correct diagnosis most commonly is made by psychiatric interview and neurological examination. CLD or congenital aphasia is a disorder primarily involving language function with a central rather than peripheral source of the dysfunction. CLD can be expressive, receptive, or mixed. A variety of psychological, speech, and hearing tests can be used to assist in the diagnosis. The age of the child is an important factor in determining which test will be most useful. Parents who have age-appropriate expectations for their children tend to recognize and communicate the child's problem more clearly and the child usually has mastered self-care and social skills. The problem with the multi-disciplinary team is the assurance of appropriate follow-up from supporting services once the initial diagnostic work has been done. The problems are mainly 3: unclear communication about the CLD concept; the infrequence of the CLD diagnosis and lack of experience in this area; and inexperience in working with a diagnostic team. A special teaching program is suggested for the children. (14 refs.) - R. Froelich.

Nebraska Psychiatric Institute
Omaha, Nebraska

330 Rappaport, Sheldon R., ed. Childhood Aphasia and Brain Damage: Vol III. Habilitation. Narberth, Pennsylvania, Livingston Publishing, 1966, 120 p. $3.25

The presentation of the proceedings of the Pathway School's 1965 Institute focuses on habilitation of aphasic and brain-injured children. Content is directed toward providing the reader with consideration of the scope, complexity, and basic factors involved in an effective habilitative program. Five major papers are included with discussions following 3 of them. A multidisciplinary presentation of topics of relationships, assessment, language, visuomotor skills, and electroencephalography is directed toward a conceptual model which recognizes that psychological and biological growth processes are orderly, sequential, and interrelated. Emergent functions are the product of interaction of related functions, precursory skills, and experiences. Therefore, no skill deficiency can be assessed or remedied without considering these relationships. Isolation and poor communication in regard to habilitative programs for this population are discussed in terms of the model. This monograph is directed toward all professional workers in this area and there is a strong emphasis on the need for interdisciplinary cooperation in the habilitative team. (52 refs.) - B. Bradley.

CONTENTS: Relationship Structure; The Assessment of Brain-Damaged Children. To What End?; The Language of Living; The Role of the Visuomotor Complex in the Acquisition of Learning Skills; A Consideration of the Application of Electroencephalography to the Study of Aphasic and Brain-Damaged Children; Conclusions.

331 Schell, Robert E., Stark, Joel, & Giddan, Jane J. Development of language behavior in an autistic child. Journal of Speech and Hearing Disorders, 32(1):51-64, 1967.

An attempt at systematic analysis, and modification of behavior was applied to a 4½-year-old autistic male. Prior diagnoses made

were: deafness, MR, autism, and aphasia. Operant conditioning procedures were employed with food or candy as the reinforcer. The goals included the bringing of verbal and nonverbal behavior under control and having the S relate to people. Treatment with a male and female therapist was given 3 days a week in 75-minute sessions. Tasks moved from visual discrimination to paired auditory-visual to auditory discrimination. Work involved: block, picture, and color sorting tasks; imitating the therapist in speech sounds; play activity; and responding to verbal commands. Improvement was evident after 45 sessions conducted at home and at the clinic. (4 refs.) - G. Trakas.

Psychology Department
Michigan State University
East Lansing, Michigan

332 Irwin, Orvis C., & Korst, Joseph W. Comparison of scores of cerebral palsied, subnormal and normal children on five speech tests. Cerebral Palsy Journal, 28(3): 10-11, 1967.

Comparison of 37 cerebral palsied (CP) children, 37 MR children, and 318 normal school children by 5 speech tests showed much better scores for the normal children than the handicapped children. The CP and MR groups each were selected from a pool of 235 children. They were matched for CA (12 years) and IQ (means of 68.7 and 66.7 for the CP and MR groups respectively). The normal school children were in the fourth, fifth, sixth, and seventh grades. The 5 tests were: a short articulation test of 10 consonants, a parallel form test of sound discrimination, an abstraction test, and the Peabody Picture Vocabulary Tests. The MR children exceeded the CP children on the articulation test but the CP children did better than the MR children on sound discrimination and abstract ability. There were no significant differences between these 2 groups on either vocabulary use or understanding. The normal children were strikingly superior on all 5 tests. The differences between the CP and MR groups support previous studies which had similar findings. (11 refs.) - R. Froelich.

Institute of Logopedics
Wichita State University
Wichita, Kansas

333 Irwin, Orvis C. Number and length of sentences in the language of mentally retarded children. Cerebral Palsy Journal, 28(1):9-10, 1967.

Sixty MR children (mean CA, 9 yrs 8 mos; mean MA, 5 yrs 8 mos; mean IQ, 62) were asked to respond to 3 pictures by describing the content. To determine the number of complete and incomplete sentences as well as the length of these sentences in terms of the number of words per sentence, the taped sentences were classified according to sex, structural completeness, and length (number of words). A mixed type of analysis of variance was computed. Results showed that MR (both sexes) children respond with equal frequency in incomplete and complete sentences. No differences between the means of the number of words per sentence of girls and boys could be found although a difference ($p = .05$) was found between the means of the number of words per sentence of girls and the incomplete sentences of the boys. (3 refs.) - A. M. Scheib.

Institute of Logopedics
Wichita State University
Wichita, Kansas

334 Flower, Richard M., Leach, Edwin, Stone, Carole Rapp, & Yoder, David E. Case selection. Journal of Speech and Hearing Disorders, 32(1):65-70, 1967.

Determining readiness for speech therapy should not rely on the speech problem alone, but should include sensory-motor and cognitive growth as well. Case selection often varies according to the setting and how the clinician views his responsibilities. Poor communication skills among the MR population are well recognized as is the shortage of therapists to treat them. Until services can be given to all who need help, the selection of cases in institutions for the MR must be made through test batteries, CA, MA, behavior, communication needs, and potential. (5 refs.) - G. Trakas.

University of California
San Francisco Medical Center
San Francisco, California

MENTAL PROCESSES

RESEARCH AND THEORY

Learning and motivation

335 Baumeister, Alfred A. Learning abilities of the mentally retarded. In: Baumeister, Alfred A., ed. Mental Retardation: Appraisal, Education, and Rehabilitation. Chicago, Illinois, Aldine Publishing, 1967, Chapter 8, p. 181-211.

Research on the learning abilities of MRs indicates that learning deficiencies are task specific and associated with definite aspects of learning situations. The identification of specific situations in which retarded learning occurs can lead to the elimination of learning deterrents or the substitution of artificial environments which will benefit learning. The findings of verbal learning research indicate that MR children benefit more from paired-associate learning procedures than from serial learning techniques. When paired-associate stimuli are meaningful and concrete, MR children perform at the same level as normal children. Most MRs do not form mediating responses spontaneously. Therefore, optimal learning situations should provide verbal coding of stimuli, initial associate presentation in a meaningful context, and verbal or nonverbal mediating labels. Distributed practice techniques and increased exposure duration also facilitate MR learning. Meaningful stimuli, overlearning procedures, and programming which avoids proactive inhibition effects enhance retention. The discrimination learning ability of MRs increases as distinctiveness of stimuli and expectation of success increase. The MR appear to be less retarded in motor learning than in other areas. Deficiency in motor skills increases as precision requirements and task difficulty increase. Motor learning is facilitated by transfer effects between related tasks, verbal reinforcement, and distributed practice. Operant conditioning procedures have been used successfully with MRs to enable them to achieve higher level adaptive behaviors. These procedures require neither verbal ability nor purposeful participation. (155 refs.) - J. K. Wyatt.

University of Alabama
University, Alabama

336 Lunzer, E. A., & Hulme, I. Discrimination learning, and discrimination learning sets in subnormal children. British Journal of Educational Psychology, 37(2):75-187, 1967.

The ability to learn visual discrimination and to form a discrimination set was not significantly different between MR children and normal pre-school children who were matched for MA. A significant relationship was found between success and self-confidence ($p<.001$). The subnormal group consisted of 12 Ss whose CAs ranged from 5:1 to 6:6 years (IQ, 46 to 62) and 16 Ss whose CAs ranged from 6:2 to 14:9 years (IQ, 35 to 58). Ten of the MRs were mongoloids. The control group consisted of 24 nursery school children with CAs ranging from 2:7 - 4:4 years. The MA of the control group was significantly higher than the MR group despite efforts to match this factor. The apparatus consisted of cardboard boxes decorated to constitute discriminada and provide 6 different visual discrimination problems. A decline in score for successive problems was found in both groups. The controls did not differ significantly from the MRs on any of the problems. Teachers rated the Ss for self-confidence on a 7-point scale. There was no significant difference in spontaneous verbalization or linguistic functions between the 2 groups that would favor the normal children. (31 refs.) - R. Froelich.

Department of Education
University of Manchester
Manchester, England

337 Heal, Laird W. The assessment of dimension preferences of subjects and dimension saliency of cue sets in the discrimination learning of mentally retarded and kindergarten subjects. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 10 p. Mimeographed.

An analysis of variance of the results of a systematic examination of the dimension preferences of 16 mildly MR young adult Ss and the dimension saliency of form and color cue sets yielded 4 significant effects: Ss differed among themselves in regard to choice; color stimuli differed in their dimension salience; form sets differed in their dimension salience; and a rewarded member existed by form interaction. The effects of both color and form stimuli were additive and no interaction between Ss, colors, and forms was found. The Peabody Automated Multidimensional Apparatus (PAMDA) was used to project 32 simultaneous color or form choice discrimination problems. Feedback procedures during training trials were so organized that direct

inferences could be made about tendencies toward the domination of either form or color choices. Choice trials were then used to determine the specific type of solution (color, form, or chance) being used. Future experiments designed to assess discrimination performance should control for dimension preference and cue set saliency. (No refs.) - J. K. Wyatt.

George Peabody College
Nashville, Tennessee 37203

338 Bilsky, Linda. The effects of training level and cue novelty on the discrimination shift performance of retardates. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 9 p. Typed.

An assessment of the effects of training level and cue novelty on the discrimination reversal behavior of MR Ss revealed a significant tendency to make extradimensional shifts when presented with novel stimuli in their preferred dimension after moderate levels of training. This tendency disappeared after overtraining. Ss were 48 institutionalized young adult MRs (mean MA, 7 yrs., 1 mo.). Color-form stimuli were projected on a 2-choice discrimination apparatus. Ss preferences for either form or color were assessed. Each S was then trained to a criterion level of 4, 8, or 16 correct trials on a problem in which their non-preferred dimension was relevant. During the next stage of the experiment the correct problem solution was always composed of a negative cue and an irrelevant cue from the previous stage. The negative solution consisted of a positive cue and an irrelevant cue from the previous stage. Ss were divided into 2 groups to assess the effects of novelty. The old cue group was given a cue presented during the previous stage. The novelty group was given a cue which introduced a new color. Both training and test trials were used. During test trials, the cues were so paired that Ss were forced to choose between components which had been correct on training trials. This determined whether Ss continued to respond on the basis of the training criterion of the previous stage or shifted to preferred dimensions. The lack of novelty influence after training level 16 may have been due to an overtraining reversal effect. (No refs.) - J. K. Wyatt.

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339 Gerjuoy, Irma R. Verbal learning. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 11 p. Mimeographed.

A series of studies in the area of associative clustering and free recall compared the responses of 2 groups of adolescent institutionalized MRs (mean IQs, 53 and 72), equal CA normals, equal MA normals, and college students in order to discover general developmental laws pertaining to perception and learning. The material presented consisted of 20-word lists, each of which was divided into 4 categories: animals, body parts, clothing, and food. These lists were organized and presented in either clustered or random order. The findings of 3 experiments indicate that both the clustering and recall abilities of MRs are significantly increased when material is presented and recalled in a clustered manner. Additional studies indicate that neither MR Ss or 10-year-old normal Ss are able to organize randomly presented lists and that prior practice with clustered material does not improve their ability to organize unclustered material. Instructions concerning list organization improve performance. This improvement is greater for Ss with a randomized list. Practice with a clustered list for a period of 4 days also increases performance. The promise of a monetary reward improves the recall of MR Ss. Verbal learning research designs need to allow for changes in motivation, ceiling effects, the evaluation of procedural changes with different groups of Ss, familiarity with the material, equality of list difficulty, and variations in word associations. (No refs.) - J. K. Wyatt.

Edward R. Johnstone Training
and Research Center
Bordentown, New Jersey

340 Noonan, J. Robert, & Barry, John R. Performance of retarded children. Science, 156(3772):171, 1967.

"Rigidity" on the part of the MR may be due to such motivational factors as social deprivation and feelings of inadequacy. An unpublished study comparing the performances of normal children, institutionalized MRs, and noninstitutionalized MRs under various rewards found that the noninstitutionalized retardate performed longer and faster than the other 2 groups under social reinforcement. It is suggested that success deprivation in noninstitutionalized retardates may be as important an influence on their behavior as

social deprivation is on the behavior of institutionalized retardates. (1 ref.) - J. Snodgrass.

Department of Psychology
University of Georgia
Athens, Georgia 30601

341 Nadel, Ethan R. Differences in reversal learning between normal and mentally retarded children. Forum, 3(2):61-64, 1967.

To explain the discrepancy between the Lewinian and Lurian hypotheses concerning reversal learning, 10 MR Ss (mean MA = 9.5, mean CA = 15.4) and 7 normal Ss (MA = CA = 9.5) were studied. Correct responses were rewarded by poker chips which could be exchanged for candy with the criterion of a learned response being 10 consecutive correct responses. The results showed the normal group was able to learn the reversal task faster than the retarded group, supporting the Lewinian hypothesis. No differences in verbal behavior was observed, refuting the Lurian hypothesis. (2 refs.) - C. A. Pepper.

No address

342 McManis, Donald L., Marble-sorting persistence in mixed verbal-incentive and performance-level pairings. American Journal of Mental Deficiency, 71(5):811-817, 1967.

The effects of verbal incentives on Ss who were performing in dyads depended to some extent on which incentives were paired and the Ss' relative levels of performance. The Ss were institutionalized MRs (120 boys and 120 girls) selected on the basis of their ability to perform a marble-sorting task. The marble-sorting dyads consisted of: (a) Ss with comparable baseline performance and (b) Ss with discrepant baseline performance. Within each dyad, the Ss performed alternately under different verbal incentive (reproof, praise, or competition). Measurement of the effects of combinations of incentives was achieved by allowing each S in a dyad to hear not only the verbal incentive given him but also his partner's incentive, as well as his partner's score. Reproof paired with praise produced significantly less persistence while competition paired with praise produced significantly more. Competition persistence was not reduced by reproof nor increased by praise. However, it did facilitate the production of persistence by both reproof and praise when paired with them. Different performance-level pairings produced differential incentive effects. "Praised Ss persisted significantly more than their reproved partners only in discrepant baseline pairings and more than their competition partners only in comparable baseline pairings". (10 refs.) - C. M. N. Mehrotra.

Parsons State Hospital and
Training Center
Parsons, Kansas 67357

343 Gerjuoy, Irma R., & Alvarez, Jose M. Learning set effects upon associative clustering and free recall by retardates and normals. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 7 p. Mimeographed.

The learning of auditory visual material by 60 MR Ss (IQ, 40-75; CA, 12-19) and 60 normal Ss with equal MAs (CA mean, 10) was significantly better when the material was presented in a clustered manner than when it was presented in random fashion. The recall scores of normal Ss were higher than those of MR Ss but both groups exhibited the same pattern. Two 20-word lists, each containing 4 categories of 5 words, were compiled and presented in either clustered or random order. Ss participated in 2 experimental sessions and counterbalancing of lists and manner of presentation was utilized. One list proved to be significantly easier to learn than the other for all Ss. As the number of trials increased, recall significantly increased and was significantly better for the clustered list. Practice on a clustered list did not lead to clustering when Ss were presented with a randomized list. The demonstrated inability of the Ss to transfer a clustering set and to internally organize stimuli presented in a random manner is probably related to MA rather than to IQ. (No refs.) - J. K. Wyatt.

Edward R. Johnstone Training
and Research Center
Bordentown, New Jersey

344 McManis, Donald L. Retroactive inhibition in paired-associate learning by normals and retardates. American Journal of Mental Deficiency, 71(6):931-936, 1967.

Thirty two normal and 32 EMR Ss learned paired-associate lists conforming to A-B, A-C or A-B, C-D patterns. List 1 was learned to 1 perfect recitation, list 2 for 20 trials (IL), and list 1 relearned for 10 trials

(RL). Both the normal and retarded A-B, A-C Ss showed significant retroactive inhibition during RL, significantly more interlist intrusions during IL, and significantly more intruded responses missed during RL. Significantly greater percentages of possible errors on intruded responses during RL suggested more complete unlearning of these responses during IL. Results with both IQ groups were interpreted as supporting an unlearning explanation of retroactive inhibition. (8 refs.) - (Source: AJMD)

Parsons State Hospital and
Training Center
Parsons, Kansas

345 Astrup, C., Sersen, E. A., & Wortis, J. Conditional reflex studies in mental retardation: A review. American Journal of Mental Deficiency, 71(4):513-530, 1967.

This review of the literature concerning classical conditioning of MR, with emphasis on Pavlovian concepts of higher nervous activity, supplements previous reviews in this area. The review is divided into 8 sections: (1) experimental procedures; (2) qualitative and quantitative aspects of conditioned reflex studies; (3) characteristics of the excitatory process; (4) characteristics of the inhibitory process; (5) mobility of the nervous system; (6) typology in MR; (7) word associations in retarded children; and (8) higher nervous activity in adult MR. Conclusions drawn from these categories include: (1) MRs, with some exceptions reported on TMR and SMR, acquire temporal connections as rapidly as normals; (2) MRs are deficient in their concentration of excitatory processes signaling impaired complex functions; (3) MRs show a marked tendency to generalize and a consequent speeding up of the conditioning process; (4) MR children possess weak inhibitory processes; (5) the specific feature of MR is a disturbance of the mobility or plasticity of the nervous processes; and (6) the autonomic nervous system activity in MR is essentially the same as normals, but is greater than organics. A proposed classification of MR, based on experimental evidence, subdivides MR into those with a predominance of excitatory processes, those with a predominance of inhibitory processes, and those with an equilibrium of both processes. Suggestions for further research include expanding and elaborating standardized conditioned reflex procedures into a battery for eventual use as a differential diagnostic tool; confirming, by studies, the Russian literature on MR; correlating clinical categories with patterns of impaired neural activity; and analyzing the effects of classical as well as modern drugs on the nervous system. A glossary of Pavlovian terms is presented. (109 refs.) - R. Grieger.

555 Prospect Place
Brooklyn, New York 11238

346 Lobb, Harold. Attenuation of trace electrodermal conditioning by benzedrine in mentally defective and normal adults. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 15 p. Typed.

Medium doses of benzedrine given to 320 individuals, half of whom were MR, were found to be deleterious to learning, particularly for the MRs. A Grason-Stadler Psychogalvanometer conditioning apparatus was used. Ten treatment classes were arranged to include 2 drug conditions and 5 inter-stimulus intervals (ISI). Placebo capsules were used with controls. The influence to adaptation and classical trace conditioning of the electrodermal response (EDR) was measured and extinction trials were given the next day. There was no relationship between EDR and skin resistance for normal and MR, amphetamine, and placebo groups. Benzedrine did not affect EDR in adaptation trials. Benzedrine had a detrimental effect on learning but not on unconditioned responses to tone or shock. Acquisition was increased among normal females. The mentally normal groups were far superior in EDR conditioning during the acquisition phase with or without the drug. Amphetamines in this study did not augment the autonomically-mediated EDR which may be caused by the small dosage of .2 mg/kg. The theory that amphetamines are synaptic blockers was supported. MRs demonstrated greater inhibitory deficit during extinction. (19 refs.) - R. Froelich.

University of Western Ontario
London, Ontario, Canada

347 Ross, Leonard E., Headrick, Mary W., & MacKay, Patricia B. Classical eyelid conditioning of young mongoloid children. American Journal of Mental Deficiency, 72(1): 21-29, 1967.

Two groups of 10 mongoloid children, mean CA = 50.6 mo. and 92.2 mo., received classical eyelid conditioning acquisition and extinction trials across a 6-day experimental period. A 500 msec. conditioned stimulus--unconditioned stimulus (CS--UCS) interval was used for half of the Ss in each group while the other half received a 3,000 msec. pairing.

Only Ss receiving the 500 msec. CS--UCS interval showed evidence of conditioning, with the older Ss reaching much higher levels of conditioning. The conditioning procedures used were found to be quite satisfactory for use with retardate populations of these age ranges. (5 refs.) - (Source: AJMD)

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348 Birnbrauer, J. S. Exploration of operant conditioning in physical therapy. In: American Association on Mental Deficiency, & U. S. Public Health Service, Mental Retardation Branch. Role of Physical Therapy in Mental Retardation. Proceedings of the Workshop for Physical Therapists held at the 90th Annual Convention of the American Association on Mental Deficiency, Chicago, Illinois, May 1966, p. 36-42; discussion, 42-45. Mimeographed.

The operant principle of reinforcement suggests ways to motivate children. Although the principle may not be new, the systematic approach they suggest is. Measurement, behavior, and the child's environment are the foci. Patients are viewed as amenable to change, and continuous monitoring and careful technique are important. A teacher differentially attends to behavior, rewards near-right responses, ignores incorrect behavior, and uses praise and candy as rewards. Harmless incorrect responses are ignored, but dangerous behavior is stopped. Verbal responses are always used as reinforcers and removal of rewards can be effective. Consistent rules prevent competition-based complaints. Dressing could be taught by reinforcing small steps along the way from the end of the behavior chain backwards. By gradually increasing the ratio of behavior to reward, one can make the behavior nearly independent. Physical therapy equipment, conducive to operant conditioning, may be automated to allow the therapist to review, compare, and alter procedures. (27 refs.) - R. D. Perkins.

Department of Psychology
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349 Martin, Garry L., & Powers, Richard B. Attention span: An operant conditioning analysis. Exceptional Children, 33(8): 565-570, 1967.

An operant conditioning analysis of attention span places emphasis on task specific attention and the associated behavioral events. A long attention span or task perseverance is a function of reinforced compatible behavior and unreinforced incompatible behavior. Evidence for this view was seen in MR children who were conditioned individually to operate a lever for reward with a confederate observable behind a plexiglass partition. The stimulus of a confederate disrupted conditioned behavior but by reinforcing only the task of concern and ignoring incompatible behavior, the children rapidly came to "pay attention" to the task. Thus, the short attention span of MR and brain damaged children is not an absolute or unchangeable entity but rather a function of reinforced incompatible behavior. It has been observed that behavior problems are best handled by extinction with proper behavior rewarded by adult attention and reward. This provides the teacher with a powerful tool to improve attending behavior. The crucial variables in this situation are the contingent relationship (if-then relationship) and immediacy of reinforcement. (28 refs.) - R. Froelich.

St. Paul's College
University of Manitoba
Winnipeg, Manitoba, Canada

350 Wiesen, Allan E., & Watson, Edith. Elimination of attention seeking behavior in a retarded child. American Journal of Mental Deficiency, 72(1):50-52, 1967.

A combination of aversive consequences of adult attention seeking behavior and positive reinforcement of interaction with children was employed successfully in eliminating attention seeking behavior in an institutionalized, severely retarded, 6-year-old male. Removal from the living area was an aversive consequence while M & Ms were used as positive reinforcement. Retarded children were trained to be agents and quickly learned to reinforce the S when they were, in turn, reinforced by the attendants. (5 refs.) - (Source: AJMD)

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351 Henriksen, Kerm, & *Doughty, Richard. Decelerating undesired mealtime behavior in a group of profoundly retarded boys. American Journal of Mental Deficiency, 72(1): 40-44, 1967.

Four profoundly retarded young boys (CA, 11

to 14 years), considered to be the least capable in eating habits of their cottage, were placed at a special training table. Eating misbehavior in forms of: (1) eating too fast, (2) eating with hands, (3) stealing food from other trays, (4) hitting others at the table, and (5) throwing trays on the floor were significantly reduced in frequency by differential movement interruption, verbal castigation, and facial disapproval. Proper eating habits were encouraged by verbal and facial approval and pats on the back. Individual misbehaviors declined significantly ($p < .01$) during the 3-month training period. (9 refs.) - (Source: AJMD)

*Wyoming State Training School
Lander, Wyoming 82520

352 Buddenhagen, R. G. Shaping vocal verbal responses in a severely retarded thirteen-year-old, non-talking, institutionalized mongoloid girl. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 10 p. Mimeographed.

An operant conditioning procedure was used to teach an institutionalized 13-year-old SMR girl (Peabody Picture Vocabulary Test IQ, <10) to speak. The S was mongoloid and exhibited a large number of violent, aggressive, maladaptive behaviors in her ward relationships. Prior to the experiment, verbal behaviors had been totally absent. The conditioning procedure lasted for forty 1-hour sessions. Shaping and chaining procedures were employed. After testing several reinforcing agents, food and drink were used. The S's chief problem in the experimental situation was non-attending. Rate of learning was slow. During the experiment, at the experimenter's request, S was transferred from the ward for SMR female adults to the cottage for SMR adolescent girls and her drug dosage was reduced to half. Her behavior in the new situation continued to be extremely disruptive until a definite behavior modification program was instituted. At the end of the experiment her behavior had been greatly modified, she was enrolled in a primary course at the Training School and limited vocal verbal behavior had been established. The most important steps in using operant techniques to shape verbal behavior in this situation were: gaining S's attention; teaching S to imitate sounds; shaping vocal imitations into responses; converting imitative responses into vocal verbal operants; and bringing these operants to very high strength so that they could be maintained outside the experimental situation. (7 refs.) - J. K. Wyatt.

Wyoming State Training School
Lander, Wyoming

353 Hollis, John H. Vertical operant manipulandum for profoundly retarded children. Perceptual and Motor Skills, 24(2):465-466, 1967.

Since profoundly retarded children do not have the fine motor movements to operate an ordinary manipulandum, one has been devised similar to the Symme's manipulandum for kittens. It can be operated with gross motor movements by grasping and pulling a tether ball and requires a minimum of shaping time. Stable rates have been obtained after only 5 or 6 sessions. This vertical device can be adjusted for the required height, and is built with inexpensive hardware. (1 ref.) - C. A. Pepper.

Kansas University
Lawrence, Kansas

354 Hom, George L., & Oswalt, Gaylon L. Facilitation of extinction by feedback. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 11 p. Mimeographed.

Eight moderately mentally retarded boys were trained to operate two independent plungers under a concurrent performance variable-interval reinforcement schedule. During acquisition, a penny and a stimulus light occurred simultaneously for each reinforcement. During extinction, except for the presence of the stimulus light occurring at a variable-interval schedule in one of the plungers, no reinforcements were delivered. These procedures were repeated over several sessions for each subject. The results showed that extinction occurred significantly faster for the manipulandum which received the stimulus light as feedback during extinction.

University of Oregon
Eugene, Oregon

355 White, James C., Jr., & Taylor, Donna J. Noxious conditioning as a treatment for rumination. Mental Retardation (AAMD), 5(1):30-33, 1967.

Two ruminators at Western Carolina Center,

Morganton, North Carolina, were administered electric shock as a consequence for ruminating gestures and the treatment procedure seemed to have significantly interfered with the ruminating syndrome. The primary purpose of the study was to stop the rumination and it should be noted that shock was used only when ruminating gestures were made by the Ss. If other environmental variables served as significant distracters, the Ss were not shocked. A functional relationship between shock and rumination was not reported as extraneous variables obviously influenced the results. The reduction of the rumination was extremely variable. The results demonstrate that the method will stop or significantly interfere with the ruminating process. It will stop individual cases of vomiting, but to significantly change a lifelong pattern of rumination, other factors such as ward routine and the quality of interpersonal experience should be assessed. (9 refs.) - (Source: MR, edited)

Western Carolina Center
Morganton, North Carolina

356 Striefel, Sebastian. Isolation as a behavioral management procedure with retarded children. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 12 p. Mimeographed.

Isolation as a behavioral management procedure has varying effects as revealed by 16 MR boys placed in isolation for misbehavior. All Ss were institutionalized. CAs ranged between 7 years, 10 months and 13 years, 5 months (mean 11 years, 2 months) and IQs ranged between 24 and 80 (mean 51). The study was divided into 5 phases for clarification: the misbehavior phase, the unit with equipment phase, the avoidance phase, the unit with no equipment phase, and the request phase. Essentially, the attempt was to measure what effect negative reinforcement isolation or positive reinforcement isolation had on the unwanted behavior by providing dual manipulanda which could be used to increase or decrease the duration of seclusion. Misbehaving Ss could go to the room with manipulanda, go to an empty unit, or avoid isolation. Seclusion was aversive for 6 Ss, reinforcing for 4 Ss, and had varying effects for 6 Ss depending on the situation and the type of unit. Isolation is of use to remove the child from a situation but is of questionable value to modify the unacceptable behavior. (5 refs.) - R. Froelich.

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357 Baumeister, Alfred A., & Ward, L. Charles, III. Effects of rewards upon the reaction times of mental defectives. American Journal of Mental Deficiency, 71(5): 801-805, 1967.

Motivational factors do influence the reaction time (RT) performance of retardates. The Ss were 60 institutionalized MR males (CA 12-35 yrs, mean CA 18.9 yrs, mean IQ 61.7). In the first experiment, 4 different reward conditions were compared with regard to their effect on the RT of MRs. Praise, bell, and money-bell produced significant increments in reaction speed. By contrast, Ss in a control group who received no reward showed a decrement in performance. No significant differences in RTs were found between praise and money-bell or between bell and praise. However, the money-bell reward did produce significantly faster reaction as compared to the bell-only feedback ($p < .05$). In the second experiment, 2 groups (mean IQs 61 and 60, mean CAs 21.6 and 20.6 yrs), each with 6 Ss none of whom had participated in the first experiment, were used to study the effects of 1 reward (money) on RT performance over a number of test sessions. Counter balancing was employed. The reinforcement condition produced a significant effect on RT performance over a long period of time (9 days). Withdrawal of the reward condition produced a decrement in performance. (9 refs.) - C. M. N. Mehrotra.

University of Alabama
University, Alabama

358 Blount, W. R., Johnson, J. T., & Heal, L. W. Familiarity or reinforcement: Another look at continuity. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 9 p. Mimeographed.

No evidence was obtained to indicate the superiority of either familiarity or reinforcement in producing easier learning of an irrelevant dimension. Thus, neither a theory completely dependent on association nor one completely dependent on reinforcement is sufficient to explain the results. A two-choice discrimination problem with the dimensions of color and form was given to albino rats. Half of the Ss started with form relevant and half with color relevant cues. In stage 1, S learned the discrimination to a criterion of 14 consecutive correct trials. S then went on to stage 2, overtraining, which consisted of 150 percent of the trials to criterion in Stage 1. Feedback was withheld for half the trials of the completely positive cue group (P), reinforcement group (R), and association group (A) but it remained continuous for the

continuous feedback group (C). In stage 3 differential treatments were given to the groups so that one could look at the combined effects of both feedback and association in the partial reinforcement and association group (RA), the effect of feedback alone in group R and the effect of association alone in group A. After the 72 trials of stage 3, the cue that had been partially positive was made completely positive or completely negative. Half the Ss had the partially-positive-made-positive treatment first and the other half had the partially-positive made-negative treatment first. There were no initial cue differences during training. Neither reinforcement nor association differentially enhanced the discrimination. Neither of these failed to produce easier learning of the irrelevant dimension. (No refs.) - C. M. N. Mehrotra.

George Peabody College
Nashville, Tennessee

359 Jordan, Thomas E. Retrospective versus prospective technique in research on learning disability. Journal of Special Education, 1(3):257-265, 1967.

Significant differences in favor of the prospective method were found when the prospective and retrospective techniques of longitudinal study were used to identify the frequency of early developmental adversity in a matched group of 42 fifth-grade children (28 boys, 14 girls; CA approximately 10 years). Early developmental adversity included: disorders of pregnancy, parturition, puerperium, presentation; cord complications; toxemias of pregnancy; and miscellaneous obstetrical operations. The criterion group was composed of 21 Ss selected on the basis of hospital records of which 14 had experienced early trauma. The teacher-nomination method was used to match the criterion group Ss with 21 same school class Ss. Matching was based on similarity of learning style, capacity, and achievement. The retrospective technique was used to study the early development of the teacher-nominated group. Group comparisons for the incidence of early trauma were made between the total populations of both groups, the 14 criterion Ss known to have experienced early trauma and their controls (the disease group), and the 7 criterion Ss who had avoided early trauma and their controls (the disease-free group). A significantly higher incidence (.05 level) of early developmental adversity was found in the criterion group when total populations and disease groups were compared. These findings suggest that the retrospective and prospective techniques do not produce comparable results and that the retrospective technique should not be used to explain learning disability. (22 refs.) - J. K. Wyatt.

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Nature of intelligence

360 Smith, Robert M. Creative thinking abilities of educable mentally handicapped children in the regular grades. American Journal of Mental Deficiency, 71(4): 571-575, 1967.

Forty-eight EMR fifth grade children representing a wide range of achievement, intelligence, socioeconomic status, and creative thinking abilities were identified by use of the Kuhlmann-Anderson Intelligence Test (IQs below 80). Each was matched with a "normal" child (IQ, 90 to 120) on the basis of sex, socioeconomic status, race, and school setting. Eight tests evaluating creative thought were administered. They yielded 18 factor scores plus 3 total creativity scores and a creativity index. On 12 of 14 verbal creativity factors normals exceeded EMR Ss at .05 level of confidence. No significant differences were found on the non-verbal factors. Total creativity index favored the normal Ss at the .005 level. However, when the groups were controlled for intelligence, no differences were found on any of the factors. Similar findings were obtained when mental age and achievement were controlled individually. The results support the hypothesis that in order for creativity to be manifested, a certain minimum level of general intellectual functioning is necessary. It is likely that intellectual disability is only a partial explanation for the generally poorer performance of retardates on tests of creativity. Future investigation is indicated. (16 refs.) - E. R. Bozymski.

University of Delaware
Newark, Delaware 19711

361 Heriot, James T., & Schmickel, Carol A. Maternal estimate of IQ in children evaluated for learning potential. American Journal of Mental Deficiency, 71(6):920-924, 1967.

IQ equivalents for maternal estimates of development (MED) in 65 children with an average age of 94.5 months, average full-scale IQ

of 77.32, and an average Vineland quotient of 80.79, were related to age, social position, Vineland quotient, full-scale IQ quotient, sex, race, presence of behavioral disturbances, and presence of seizures. Mothers, on the average, slightly, but significantly overestimated their child's full-scale IQ and to a lesser extent, underestimated the Vineland quotient. The correlations of MED with full-scale IQ and Vineland quotients were positive and significant. Only the presence of seizures and full-scale IQ were significantly related to the accuracy of MED. (5 refs.) - (Source: AJMD)

Johns Hopkins Hospital
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362 Nisbet, J. D., & Entwistle, N. J. Intelligence and family size, 1949-1965. British Journal of Educational Psychology, 37(2):188-193, 1967.

An inverse relationship between family size and intelligence score was found when 7-, 9-, 11-, and 12-year-old children were tested. A total of 2,868 school children in Aberdeen, Scotland were tested for verbal reasoning, non-verbal reasoning, and attainment. The relationship between mean score and family size was shown by a negative regression coefficient which increased when the drop in mean test score increased from one family size to another. The tests with a high proportion of verbal items showed a greater inverse relationship to family size. This supports the hypothesis that part of the relationship found between intelligence and family size is caused by the verbal component. Girls consistently had larger regression coefficients than boys. These findings could not be attributed to differences between the social classes, although social class I and II had lower regression coefficients. The regression coefficients were somewhat larger at 7 years of age than at older ages which conflicts with previous findings. Similar investigations in Aberdeen were done in 1949, 1950, 1956, and 1958 but the period of time was too short to make conclusions about changes in social patterns. The relationship between intelligence and family size is thought to be caused by environmental influences. (5 refs.) - R. Froelich.

Department of Education
University of Aberdeen
Aberdeen, Scotland

363 Connor, Frances P. Learning patterns of children. In: American Association on Mental Deficiency, & U. S. Public Health Service, Mental Retardation Branch. Role of Physical Therapy in Mental Retardation. Proceedings of the Workshop for Physical Therapists held at the 90th Annual Convention of the American Association on Mental Deficiency, Chicago, Illinois, May, 1966, p. 54-59. Mimeographed.

Three abilities of MR children are discussed on the basis of their relationship to learning. The intellectual operations are those structured by Guilford and include cognition, memory, divergent productivity, problem solving, and evaluation. MR children are often held at the first 2 dimensions with little opportunity given for the higher level operations. There is a tendency not to expose them to materials thought to be above them intellectually. Guilford's model involves different levels indicating the MR as deficient in a symbolic domain with some difficulty in the semantic and behavioral area. The MR would be deficient in the divergent and convergent processes with their responses directed to the information in a concrete form. The physical therapist has the role of assisting retardates in internalizing behavior and understanding and moving with meaning. The second requirement of development pertains to sensory-motor abilities and involves motor function and physical proficiency. The lack of systematically structured physical fitness activities may influence the results of motor studies of the MR. The affective domain of development should be viewed as a dynamic process. Piaget's theory is applicable in indicating that knowledge involves a correcting process which moves both forward and backward. MR children usually have more than 1 handicap with problems in various areas. MR is not an entity but a symptom of certain problems in areas of motor skills, communication, perception, and language. (No refs.) - B. Bradley.

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Perception

364 Dawson, William W. Stereoscopic perceptual deficit of mentally retarded adults. American Journal of Mental Deficiency, 71(6):964-968, 1967.

Objective measures of depth judgment were made by alignment of a moving target and a fixed reference. Five normals and 4 diffusely brain damaged patients (IQ, 37 to 59)

performed equally well under binocular conditions where each eye was equally illuminated. When, under otherwise identical conditions, luminance seen by 1 eye was reduced 1 log unit, alignment errors were produced by Pulfrich Phenomenon distortion of the apparent path of the target. Error scores measured under this condition were significantly greater ($p < 0,05$) for the normal group. Thirty three percent less information was being utilized in the retardates' estimations of the moving target orbit. (9 refs.) - (Source: AJMD)

College of Medicine
University of Florida
Gainesville, Florida 32603

365 Houssiadas, L., & *Brown, L. B. The coordination of perspectives by mentally defective children. Journal of Genetic Psychology, 110(2):211-215, 1967.

"Although egocentricity and an ability to coordinate perspectives are broadly related to chronological age the emergence of these stages is much slower in mentally defective than in normal children." The Ss were 40 residents from an institution for MR in South Australia. Their ages ranged from 8 to 15 years and mean IQ was 55. Two experiments were conducted. The first experiment involved a stimulus situation with 4 objects. Four full-size photographs were taken of the arranged stimuli from 4 different positions A, B, C, and D. After the Ss had seen an arrangement of these objects they were asked to point to the photograph which showed their own point of view. They were next shown a doll photographed from positions B, C, and D and were asked to identify the pictures "taken from each position." Responses were scored as "veridical" when the S pointed to the correct photograph. A response was scored as "egocentric" if for position B, C, or D the S pointed to the photograph for position A (or what he himself could see). The results indicate that "the pattern of predominant responses follows the same sequence suggested by Piaget, whose data were derived from normal children". The second experimental task involved making a simple 1 to 1 correspondence between the objects on the table and the same objects shown in the photograph. There were Ss in each age group who made errors in arranging the objects to parallel the photograph. However, in the case of the Ss of the oldest group these mistakes were errors of detailed positioning rather than gross errors of arrangement. (4 refs.) - C. M. N. Mehrotra.

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366 Richard, Wayne C., & Rosenberg, Sheldon. Searching behavior in the retardate as a function of exposure time and matrix size. American Journal of Mental Deficiency, 72(1):53-59, 1967.

The effects of exposure time and matrix size upon the errors and the search time was evaluated with 64 high level retarded Ss (CA, 12 to 24 years). Two exposure times, 4 and 12 sec., and two matrix sizes, 16 and 36 items, were used. Ss spent more time and made more errors when searching the 36-item matrix. Contrary to prediction, an increase in exposure time from 4 to 12 sec. brought about an increase in search time, although no effect on errors was noted. No interactions were found. There was a significant negative correlation (-.347) between CA and errors. (21 refs.) - (Source: AJMD)

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Nashville, Tennessee 37203

367 Spitz, Herman H. A comparison of mental retardates and normals on the distorted room illusion. American Journal of Mental Deficiency, 72(1):34-39, 1967.

A comparison was made between 36 high grade retardates (24 males and 12 females; mean IQ, 68,17) and 36 normals of equal CA (19,09 years) on a table model of the Ames distorted room--a trapezoidal room which simulated rectangularity--and on a control room which was truly rectangular. Loss of size constancy in judging 2 unequal circles was the illusion indicator. No significant difference between groups was found on either room. Even under visual restraint, retardates maintain as much size constancy as equal CA normals. Deprivation of motion parallax and of binocular disparity, along with the manipulation of linear perspective, contribute to the illusion. Results support previous findings that retardates, although less susceptible than normals to physiological, full-cue illusions, are equally susceptible as normals to experiential reduced-cue illusions. (10 refs.) - (Source: AJMD)

Edward R. Johnstone Training
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Bordentown, New Jersey 08505

368 Hoats, David L. Method of constant stimuli in the rod and frame measure of field dependence with retardates and normals. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 10 p. Typed.

Decrease in field dependence (FD) may result not only from an increase in intelligence or age, but also from some complex interaction of the two. Ss were 16 retardates, 16 approximately equal CA normals from high school, and 16 approximately equal MA normals from the 5th grade. Witkin's rod and frame apparatus was redesigned for use by the E so that the S was not required to verbalize left and right correctly. A pretest/training session was organized to make sure that S knew the difference between objective upright and oblique and to introduce S to the response procedure. The S was then run on the rod and frame apparatus in a darkened room. Each S was given 26 trials, which included 20 test trials and 6 "lie item" trials. On the test trials the rod was randomly presented at 0°, 2°, 4°, 8°, or 16°, two trials each right and left. "Lie items" were comprised of 2 trials with the rod at 24° right or left and the frame at 28° in the same direction, and 4 trials with both the rod and frame at 0°. These 6 "lie items" trials were randomly mixed with the test trials. All the Ss were run 3 to 7 days later on the same series but on these trials the frame was not used. Each S thus served as his own control. The Mann-Whitney U-Test was used for comparing the groups. The number of errors on the 8° setting reliably differentiates between retardates and both normal groups, while errors at the 0° setting differentiate retardates from normals of the same CA. (4 refs.) - C. M. N. Mehrotra.

Edward R. Johnstone Training
and Research Center
Bordentown, New Jersey

369 Winters, John J., Jr., & Gerjuoy, Irma R. Recognition of tachistoscopically exposed letters by normals and retardates. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 16 p. Mimeographed.

Thirty adolescent EMRs (CA, 15.8 years), 30 equal MA normals, and 30 equal CA normals were tachistoscopically presented a square array of 4 letters at 2 exposures (.01 sec. and .3 sec.). The groups did not differ in correct recognitions at the shorter exposure; the 2 older groups had significantly better recognitions in the right visual field than the left. Under the longer exposure, the groups ordered from poorest to best performance were retardates, equal MA normals, and equal CA normal. No group recognized more letters on one side than the other. Consistency in pattern of reporting appeared to aid recognition. (14 refs.) - Author abstract.

Edward R. Johnstone Training
and Research Center
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370 Ball, T. S., & Wilsoncroft, W. E. Complex phi thresholds of brain-damaged children. Perceptual and Motor Skills, 24(3, part 1):879-883, 1967.

Brain-damaged children respond as normal adults in organizing discrete elements into a moving form. Ss were 12 cerebral palsied (CP) children with a mean CA of 8.7 years and a mean MA of 7.6 years. Their motor capacity for the pegboard task was intact. However, on the diamond copying task they manifested a perceptual-motor deficit. A group of 12 graduate students with a mean CA of 26 years served as controls. All the Ss were shown a complex display in which 1 light alternated with 4 other lights to induce apparent motion. Four different stimulus conditions were used. The mean phi threshold under each stimulus condition was calculated and the data were subjected to analysis of variance. Interaction between groups and conditions was found to be non-significant indicating that both groups reacted to the different stimulus conditions in a similar manner. Thus there is no indication of a perceptual deficit. The group effect was significant showing that the CP children had lower thresholds than the graduate students. Both groups reported a novel type of motion when the 4 lights were arranged as a diamond; phi thresholds differed significantly from those for an array where the lights suggested no particular form. (9 refs.) - C. M. N. Mehrotra.

Pacific State Hospital
Pomona, California

371 Jones, David, & *Spreen, Otfried. The effects of meaningfulness and abstractness on word recognition in educable retarded children. American Journal of Mental Deficiency, 71(6):987-989, 1967.

Thirty-six EMR children (CA, 6 to 13 years) were asked to repeat 52 one-syllable nouns

presented by earphones under masking conditions. All words had been scaled for meaningfulness and 2 measures of abstractness. They were of equal frequency of occurrence and matched in pairs for initial phoneme. In this group overall performance on the task was not related to MA or CA. There was no marked ear preference. Meaningfulness and abstractness were significantly related to the recognition of the individual words. This effect was consistent with previous findings although not as marked as in adult normal or retarded subjects. (9 refs.) - (Source: AJMD)

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PSYCHODIAGNOSTICS

372 Friedlander, Bernard Z., McCarthy, J. J., & Soforenko, A. Z. Automated psychological evaluation with severely retarded institutionalized infants. American Journal of Mental Deficiency, 71(6):909-919, 1967.

Adaptive behavior was assessed in severely retarded, multiply handicapped, institutionalized infants by means of an automated operant behavior play device (PLAYTEST Model 65-A) attached to an ordinary playpen. Extended records of spontaneous play were recorded for 2 boys with MAs less than 10 months. One boy, with confirmed Down's syndrome (CA, 2.5) could crawl and stand with support; the other (CA, 3.5) could only lie supine and raise this arms above his chest. Both showed clear-cut acquisition of differential performance for 2 different audio reinforcers. The results are discussed in terms of Piaget's analysis of the sensorimotor period of intellectual development. (17 refs.) - (Source: AJMD)

Mental Development Center
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373 Kraus, Matthew J., Jr. The use of psychological tests with the mentally retarded deaf. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 3 p. Mimeographed. (Abstract)

Difficulty with validity arises when psychological tests and techniques are used with an atypical population like the MR deaf. Tests that have been used with this group include: the Wechsler Scales, the Leiter International Scale, the Nebraska Test of Learning Aptitude, the Colored Progressive Matrice, and the Revised Beta. The Wechsler, the Raven, and the Nebraska have been found to be the most successful tests. Personality assessment of the deaf MR is also difficult. Limited success has been found with the use of the Minnesota Multiphasic Personality Inventory and the Rorschach. A better method of assessing this atypical population is the observation of behavior based upon long periods of time. Measuring interest has met with little success because the deaf individual is not able to understand the testing materials. The General Aptitude Test Battery developed by the U. S. Employment Service is used sometimes to measure aptitude for employment. The MR deaf also experience difficulty in taking scholastic achievement tests. These tests, with their techniques, do not show valid results. Much work still needs to be done in developing useful and valid testing techniques. (4 refs.) - J. Melton.

Fairview State Hospital
Costa Mesa, California

374 Mittler, Peter. Assessing subnormal children. Special Education, 55(4):8-11, 1966.

The problems in Great Britain of assessing the intelligence of severely subnormal children are discussed on the basis of aims, types of tests, and remedial programs. At present, the school medical service has the primary responsibility for assessment of subnormal children. One of the major needs is for assessment in an educational setting with suitable testing conditions. The Ministry of Health is responsible for training centers but teachers' organizations are attempting to transfer the educational work of junior training centers to the Department of Education and Science. Increased collaboration between education and health agencies is being attempted. A properly administered and appropriate individual intelligence test is one of the best methods for establishing a child's present level of functioning but these conventional tests often are not applicable to children with severe handicaps. The application of Piaget tests for this population allows for flexibility. The primary

goal of psychological testing should be to determine areas of handicap for remediation. A systematic analysis of the child's assets and deficits is necessary with consideration of his maturity in learning, concept formation, memory, and linguistic maturity. Various techniques of assessment such as nonverbal tests, language, vocabulary tests, and check-lists are described and advantages and limitations cited. Assessment of subnormal children is a continuous process and is essentially remedial and educational. (15 refs.) - B. Bradley.

Birkbeck College
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London, England

375 McConnel, (Mrs.) Th. S. Measurement and evaluation of development. In: Australian Group for the Scientific Study of Mental Deficiency. Proceedings of the Fifth Annual Interstate Conference on Mental Deficiency. Van Pelt, J. D., ed. Brisbane, Australia, October 1966, p. 31-40.

An adequate, comprehensive, and individualized evaluation of each MR with regard to the general health, specific diagnosis, emotional, social sensory, and motor factors as well as presence and degree of mental retardation, is necessary in order to assess any program of education and training of MRs. Each MR is a continuing dynamic process of interaction of a complex matrix of factors, thus cannot be considered as a group or average. The evaluation must present an integrated, total picture of the retardate as he functions in the environment related to his potential. It must be in a form understandable and usable by all concerned with the training and education as well as a guide for counseling parents. Studies should be designed with enough uniformity so that results will be comparable. (19 refs.) - W. A. Hammill.

Bowen House Centre
Brisbane, Australia

376 Pauker, Jerome D. Psychometric assessment of dimensions of personality and behavior in retarded children. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 18 p. Mimeographed.

The Missouri Children's Picture Series (MCPS) is a new personality test applicable to MR children with a mental age as low as 4 years. Personality assessment by psychometric examination has been criticized for having a number of deficiencies. These inadequacies are even more true for the personality assessment of MR children and are of such limited validity that routine use is contraindicated. The MCPS has been used for testing 3,905 normal school children and currently is being validated for MR children at a number of hospitals and centers. The test consists of presenting the child with 238 cards each with a drawing on it showing a variety of situations. The child is asked to sort the cards into 2 piles: those that look like fun to him and those that do not. The results are transformed into T-scores according to age and sex. Responses have been interpreted from the standpoint of 6 response communality scales: conformity, masculinity-feminity, maturity, aggressiveness, inhibition, and hyperactivity. Validation which includes the identification of profile types is also in progress. Results have been gratifying and the test may be available for general clinical use by 1968. As yet the test should be used only for experimental and research purposes. (3 refs.) - R. Froelich.

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377 Cromwell, Rue L. Personality evaluation. In: Baumeister, Alfred A., ed. Mental Retardation: Appraisal, Education, and Rehabilitation. Chicago, Illinois, Aldine Publishing, 1967, Chapter 4, p. 66-85.

Personality evaluation of an MR child is an effective way to obtain information which will aid parents, teachers, psychologists, and social workers in understanding the child's development and planning his future. In the process of maturing, children experience 5 progressive phases of personality development: basic boundary discrimination, intact hedonic functioning, conceptual motivational system, effective interpersonal functioning, and awareness of cultural expectations. Because MR children are retarded in personality development and seldom attain awareness of cultural expectations, a personality evaluation can be most important in identifying the child's level and rate of development. Personality data may be obtained from objective behavior reports, direct observations, intelligence tests, playroom behavior, testing room behavior, and objective personality inventories. Reports should be written clearly and should include basic identifying information, referral information, a summary and documentation of the

findings, and recommendations. (26 refs.) - J. K. Wyatt.

Vanderbilt University
Nashville, Tennessee

378 Allen, Robert M., & Jones, R. Wayne. Perceptual, conceptual and psycholinguistic evaluation of the mentally retarded child. In: Baumeister, Alfred A., ed. Mental Retardation: Appraisal, Education, and Rehabilitation. Chicago, Illinois, Aldine Publishing, 1967, Chapter 3, p. 39-65.

In order to obtain a clear picture of the unique capabilities of the individual MR child a combination of tests selected to evaluate the specific problems posed by the child should be administered. Evaluation procedures should assess: intellectual status; areas of educational asset and deficit; potential for educable or trainable curricula; and possible limits for academic training, pre-vocational possibilities, and the activities of daily living. Test batteries should include standard intelligence tests and perceptual, conceptual, and psycholinguistic tests. Picture vocabulary tests based on visual recognition ability may be used with speech impaired children. They require adequate vision and hearing as well as oral comprehension ability. The various drawing tests assess perceptual level, configurational skill, and degree of motor coordination. Verbal and performance intelligence tests evaluate the intellectual functioning of children with specific difficulties and may be substituted sometimes for standard intelligence tests. They provide data concerning conceptual maturational level as well as MA and IQ scores. The Standard Progressive Matrices is a culture fair test that evaluates reasoning, concept formation, and environmental manipulation abilities. The Developmental Test of Visual Perception provides data in the areas of eye-motor coordination, figure-ground discrimination, form constancy, perception of position in space, and spatial relations. The Illinois Test of Psycholinguistic Abilities assesses facility with auditory and visual stimuli, efficiency of vocal and motor responses, and decoding, encoding, and associative processes. Testing should be a preliminary step in planning for the MR child. (148 refs.) - J. K. Wyatt.

University of Miami
Coral Gables, Florida

379 Horne, Betty M., & Justiss, Will A. Clinical indicators of brain damage in mentally retarded children. Journal of Clinical Psychology, 23(4):464-465, 1967.

To test the use of the Wechsler scales as a clinical indicator of brain damage, 2 groups of 20 Ss matched for sex, age (mean, 26.9 years), and full scale IQ (mean, 58) were compared on 3 perceptual and motor tasks (finger oscillation, embedded figures, and figure drawing) and their EEG recordings (alpha and pathological activity). In group 1, the discrepancy between verbal and performance IQ was 15 points; in group 2, the discrepancy was less than 10 points. In no instance did correlations reach .50 or the .01 level of significance, nor was there any significant difference in their EEG activity. Since there is little relationship among the indicators, characteristics common to all brain injured MR cannot be outlined or sharply defined at present. (4 refs.) - C. A. Pepper.

Sunland Training Center
Gainesville, Florida 32601

380 Glasser, Alan J., & Zimmerman, Irla Lee. Clinical Interpretation of the Wechsler Intelligence Scale for Children. New York, New York, Grune & Stratton, 1967, 152 p. $5.75

Practical applications of knowledge about the Wechsler Intelligence Scale for Children (WISC) focus on information on administration and scoring, projective aspects, brief test forms, and reporting and interpretation of protocols. The WISC is often selected to screen MR children as it allows for a description of the child's functioning and potential as well as level of intelligence. Pattern analysis of subtests as a method of determining diagnostic categories has not been successful but profile analysis of test responses has proven very valuable. The limitations of the WISC include narrowness of standardization sample, absence of an alternate form, and problem of validity of some of the subtest items. A sample test write up and work sheet illustrates major factors in reporting results of a WISC examination. However, the Stanford Binet is recommended for the severely retarded due to its lower age level range. The new Wechsler Preschool and Primary Intelligence Scale extends the age range of the WISC from 4-7. The primary advantage of the WISC is the verbal performance breakdown of this instrument as well as the diversity and range of the tasks. Brief

testing, another contribution of the WISC, has 2 primary uses: the Selective-Partial WISC is tailored to fit specific population groups, and the Brief WISC is a short form which allows an accurate prediction of the total test score. The complete verbal scale of the WISC is considered the most completely evaluated brief scale as well as the most valid of all combinations. Non-intellectual factors and their relationship to performance are important and should be considered. (90 refs.) - B. Bradley.

CONTENTS: Introduction; Administration and Scoring; Reporting WISC Results; Subtest Analysis of the WISC; Generalized Projective Aspects; Adaptations and Brief Forms.

381 Carr, Donald L., Brown, Louis F., & Rice, James A. The PPVT in the assessment of language deficits. American Journal of Mental Deficiency, 71(6):937-940, 1967.

Previous research suggests that the Peabody Picture Vocabulary Test (PPVT) is not an adequate quick substitute for an individual intelligence test. The PPVT may be a measure of specific language deficits or hearing vocabulary. The present study, using the nine subtests of the Illinois Test of Psycholinguistic Abilities as predictor variables, failed to find the PPVT as an adequate measure of any of nine specific language functions in a sample of 90 EMR Ss attending special education classes. (9 refs.) - (Source: AJMD)

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382 Belmont, Ira, Birch, Herbert G., & Belmont, Lillian. The organization of intelligence test performance in educable mentally subnormal children. American Journal of Mental Deficiency, 71(6):969-976, 1967.

The Wechsler Intelligence Scale for Children (WISC) performances of a total population sample of educable mentally subnormal children in the 8- to 10-year age range, who had been both socially and psychometrically identified, resident in Aberdeen, Scotland, were compared for WISC subtest profile and on factor structure with the performances of normal children. The profile of the subnormal group was different from that of normals. The lack of verbal facility was outstanding. Factor analysis indicates that, although the same three factors emerged for both subnormal and test standardization groups, the verbal and the perceptual organization factors were highly and positively associated in the normal standardization group but negatively associated in the subnormal group. The findings are considered in relation to the isolation of verbal skills in the mental organization of subnormal children. (15 refs.) - (Source: AJMD)

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Eastchester Road & Morris
Park Avenue
New York, New York 10461

383 Koh, Tong-He, & Madow, Arnold A. Relationship between PPVT and Stanford-Binet performance in institutionalized retardates. American Journal of Mental Deficiency, 72(1):108-113, 1967.

The Peabody Picture Vocabulary Test (PPVT) and Stanford-Binet Intelligence Scale (SB) were administered to 152 institutionalized MR Ss (mean IQ, 47.1). The correlation between the PPVT MA and SB MA was .93, with a partial correlation of .90 when the CA was held constant. The relationship between the PPVT RS and SB MA was slightly curvilinear, resulting in a correlation ratio of .94 and .91. PPVT MAs, however, underestimated SB MAs below the 5-year MA level, overestimated above the 9½-year MA level, and were more comparable between these two MA levels. In order to correct this asymmetry, a regression equation which relates SB MA to PPVT RS was derived. Cross validation with another sample of 90 MR substantiated the results. (6 refs.) - (Source: AJMD)

Faribault State School and Hospital
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384 McConnell, Owen L. Koppitz's Bender-Gestalt scores in relation to organic and emotional problems in children. Journal of Clinical Psychology, 23(3):370-374, 1967.

Developmental scores (DS) are related significantly to organic but not to emotional problems which indicates that these scores have potential for assessing organicity in emotionally disturbed children. Ss were 120 children with CA ranging from 5.4 to 25.0 years, MA from 5.0 to 10.9 years, and IQ from 40 to 98. A 3x4 factoral design was used to investigate possible interaction effects by

comparing Bender protocols of Ss who are simultaneously emotionally disturbed and brain-damaged. The design had 3 levels of organicity (substantial, minimal, and non-organic) and 4 categories of emotional disturbance (situational, neurotic-characterological, borderline psychotic, and psychotic). An analysis of variance (ANOVA) was performed on the DS. Interaction between degrees of brain damage and type of emotional problem was non-significant. The main effect of degree of brain damage was significant at the .001 level. Combining across emotional categories showed that the greater the brain damage, the higher the DS. The DS differentiated the non-organic and minimal brain damage Ss fairly well for all types of emotional problems except psychosis. The main effect of type of emotional problem was not significant. DS would be useful in assessing organicity in emotionally disturbed children. Similar results were obtained by using ANOVA for brain injury indicators. Emotional indicators were unrelated to emotional or organic factors, probably because of poor internal consistency. (3 refs.) - C. M. N. Mehrotra.

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385 Egeland, Byron, Rice, James, & Penny, Susan. Inter-scorer reliability on the Bender Gestalt Test and the Revised Visual Retention Test. American Journal of Mental Deficiency, 72(1):96-99, 1967.

The Bender Gestalt Test (BG) and Revised Visual Retention Test (VRT) were administered to 80 retardates (mean CA, 9 years, 9 months; mean IQ, 78). Three psychologists scored the tests, using Koppitz' scoring system for the BG. All inter-scorer reliability coefficients were significant ($p < .05$), with mean correlations among scorers ranging from .90 to .94 for the number correct and total errors. Mean differences among scorers were found on the total number of errors and 2 of 4 major error categories on the BG. On the VRT mean differences among scorers existed for total number errors and on 9 of the 16 major error categories. This raises the question as to the usefulness of the scoring systems in making diagnosis on the basis of objective scores. (5 refs.) - (Source: AJMD)

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386 Brown, Louis F., & Rice, James A. Form equivalence analysis of the Benton Visual Retention Test in children of low IQ. Perceptual and Motor Skills, 24(3, part 1):737-738, 1967.

Contrary to previous findings for a sample of average intelligence, a sample of children with low IQs were equivalent on all except 1 scoring dimension on Forms C and D of the Benton Visual Retention Test (VRT). Ss were 80 children enrolled in special education classes. Their mean IQ was 80 and mean CA was 9.7 years. The Ss were divided into 2 groups (38 in Group I and 42 in Group II) which were matched on CA, IQ, and pertinent scoring dimensions as indicated in the Benton manual. The groups were found to be equivalent on MA. Group I was given Form C as the memory task (Administration A) and Form D as the copying task (Administration C). Group II got Form D as the memory task and Form C as the copying task. The means for each scoring dimension were compared for both memory and copying performances. No scoring dimension was found to differ significantly at the .01 level and only rotation in the copying task was found to be significant at the .05 level. (1 ref.) - C. M. N. Mehrotra.

University of Iowa
Iowa City, Iowa

387 Fuller, Gerald B., Sharp, Heber, & Hawkins, William F. Minnesota Percepto-Diagnostic Test (MPD): Age norms and IQ adjustments. Journal of Clinical Psychology, 23(4):456-461, 1967.

Revised norms of the Minnesota Percepto-Diagnostic Test (MPD) for use with normal and limited IQ Ss have been developed on a standardization sample of 4,000 Ss (age range 5-20 years, IQ range 51-140). Groups were classified by year of age and IQ according to 10-point ranges with IQs below 80 being lumped into age groups 5-9, 10-15, and 16+. Two phases (adjusting for the effects of IQ and establishing developmental levels according to age) lead to a final set of tables which convert MPD raw scored into standard scores adjusted for IQ and age. (2 refs.) - C. A. Pepper.

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388 Griffith, Albert V., & Lemley, Dorothy West. Teeth and threatening look in the Draw-A-Person test as indicating aggression. Journal of Clinical Psychology, 23(4): 489-492, 1967.

Two hundred and twenty-two institutionalized EMRs tested on the Draw-A-Person were divided into 4 groups according to (1) teeth and threatening look, (2) teeth without threatening look, (3) no teeth and threatening look, and (4) no teeth and no threatening look. They were then rated by cottage parents with regard to verbal and physical aggression. Chi-square analysis revealed that groups (1) and (4) differed significantly ($p < .05$) on verbal aggression, but with physical aggression there were no statistically significant differences. These data do not support previous hypotheses and these signs do not predict the actual behavior supposed. (5 refs.) - C. A. Pepper.

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389 American Institutes for Research, & Jewish Foundation for Retarded Children. Development of Basic Motor Abilities Test for Retardates: A Feasibility Study. Final Report. Elkin, Edwin H., & Friedman, Erwin. (JFRC Monograph No. 67-1) Washington, D. C., Jewish Foundation for Retarded Children, February 1967, 42 p.

Existing tests of basic motor abilities, which are modified for the MR can serve as indices of the retardate's development and provide a basis for differential assignment to training programs. The feasibility study is a result of the cooperation of the American Institutes for Research and the Jewish Foundation for Retarded Children in a project on methodology involving: (1) familiarization and test development, (2) cooperability screening and subject information survey, and (3) performance testing and data analysis. Forty-one Ss (30 males, CA 6 to 25; 11 females, CA 8 to 24) were tested on 8 motor tests. The group included 8 mongoloids, 13 whose retardation was connected with trauma or injury, 18 termed unknown causes but with structural reactions manifest, and 3 unknown with functional reaction manifest. Sixteen Ss were on drug medication. IQs ranged from 18-76 with a mean of 43. Eleven were considered borderline, 18 moderately retarded, and 12 severely retarded. Results were analyzed for usefulness of the tests and nature of the performance measured. Reliability index and testability were examined. The 3 most useful tests for these criteria were: Broad Jump Test of Explosive Strength, Minnesota Manipulation Test of Manual Dexterity, and Simple Visual Reaction Time Test. Twenty Ss were unable to complete at least 1 of the 8 tests and this was directly related to age. Results indicated that mongolism appears related to arm-hand steadiness; housing to explosive strength, gross body equilibrium, and dynamic flexibility; CA appears related to static strength and manual dexterity; and IQ to gross body equilibrium and arm-hand steadiness. (33 refs.) - B. Bradley.

CONTENTS: Introduction; Problems in Retardate Performance Testing; Performance Testing Preparation; Performance Testing and Data Analysis; References and Appendices.

390 Irwin, Orvis C., & Korst, Joseph W. Summary of the reliability coefficients of six speech tests for use with handicapped children. Cerebral Palsy Journal, 28(4):6-7, 1967.

Records of 1,890 children (CA, 6-16) were examined to determine the reliability coefficients of six speech tests constructed for use with MR and cerebral palsied children. Included were tests on: (1) integrated articulation, (2) articulation of 10 difficult consonants, (3) sound discrimination, (4) abstraction, (5) vocabulary understanding and (6) vocabulary use. Coefficients were determined by the Kuder-Richardson, parallel form, Hoyt, and test-retest methods. Twenty-seven of the 28 coefficients were acceptable (.75 to .95). Consonant in the final position was the only one not acceptable ($r = .55$). The 6 tests may be used reliably with speech handicapped children who are cerebral palsied, blind, or MR. (12 refs.) - C. A. Pepper.

Institute of Logopedics
Wichita State University
Wichita, Kansas

391 Weener, Paul, Barritt, Loren S., & Semmel, Melvyn I. A critical evaluation of the Illinois Test of Psycholinguistic Abilities. Exceptional Children, 27(1):373-380, 1967.

The standardization group and procedures, validity, reliability, and potential uses of the Illinois Test of Psycholinguistic Abilities (ITPA) are discussed. The ITPA was designed to identify psycholinguistic abilities and disabilities in children between the ages of 2½ and 9 years. The theoretical structure of the test is based on an adaptation of Os-

good's communication model which is an extension of Hull's mediation hypothesis. Three dimensions of psycholinguistic abilities (level of organization, channels of communication, and process) are assessed through 9 subtests. The standardization population, randomly selected from a public population, had an IQ range restricted to 80 through 120 and all children with serious sensory or physical handicaps; Negroes and parochial school students were excluded. These restrictions hinder the generalizability of the normative data. The ITPA is a beginning toward the goal of differential diagnosis based on profile analysis. Still lacking are: (1) establishment of the validity and reliability of the test, (2) adequate standardization, and (3) a more adequate integration of the subscales and explanation of the relationship among subscales and between subscale performance and other relevant behavior. Also the appropriateness of the factoring technique is questionable. (9 refs.) - T. C. Agin.

University of Michigan
Ann Arbor, Michigan

392 McCarthy, James J. A critical evaluation of the Illinois Test of Psycholinguistic Abilities: A response. Exceptional Children, 27(1):380-382, 1967. (Comment on critique by Weener, Barritt, & Semmel.)

The critique by Weener, Barritt, and Semmel on the Illinois Test of Psycholinguistic Abilities (ITPA) is neither critical nor evaluative and leaves the misleading impression that some new limitations of the test have been discovered. Misinterpretations have resulted from failing to consider all available evidence concerning the reliability of the test, other important data concerning the interpretation of correlations found in the manual, and new factor analytic data which point to errors in the technical manual. The comments on validity of ITPA are acceptable; however, the conclusions on reliability are not. Since the present edition of the ITPA is experimental, a revision is currently underway. (4 refs.) - T. C. Agin.

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393 Weener, Paul, Barritt, Loren S., & Semmel, Melvyn I. A critical evaluation of the Illinois Test of Psycholinguistic Abilities: A reply to Professor McCarthy. Exceptional Children, 27(1):382-384, 1967.

In rebuttal to McCarthy's note, the evaluation was based on the available evidence, the notion of minimal correlations is psychometrically egregious, and the methods used in performing the factor analyses were inappropriate. (5 refs.) - L. Clevenger.

University of Michigan
Ann Arbor, Michigan

394 Bateman, Barbara. Three approaches to diagnosis and educational planning for children with learning disabilities. Academic Therapy Quarterly, 2(4):215-222, 1967.

The accomplished diagnostician can utilize 3 diagnostic approaches--etiological, diagnostic-remedial, and task analysis--and consolidate the findings in order to adequately diagnose and plan for children with learning disabilities. Etiological diagnosis emphasizes the discovery of relationships between causative factors influencing learning difficulties and remedial programs. Concern is with case history data and classification. This approach is limited when a 1 to 1 relationship between etiology and behavior cannot be found and when remedial techniques are not clearly differentiated. Diagnostic-remedial diagnosis emphasizes identification of perceptive, integrative, or expressive disabilities which affect academic and behavioral functioning. Educational processes then can be designed to consolidate strengths or exercise weaknesses. This approach is helpful in identifying what needs to be taught but the question of how the teaching is best done remains an ambiguous one. Validity studies on the testing instruments are needed. Future research should assess the effects of different types of training. Task-analysis diagnosis is behaviorist in orientation and places emphasis on the identification of the specific behaviors a child needs to be taught and on the development of ways to construct curriculum so that step-by-step teaching methods are included. Testing instruments use criterion rather than norms as references. The method stresses successful teaching and the development of clearly defined teaching goals. (14 refs.) - J. K. Wyatt.

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Eugene, Oregon

EDUCATION

PHILOSOPHY, ADMINISTRATION, AND SUPERVISION

395 Blatt, Burton. A hypothesis of theories and methods in special education, mental retardation, and cultural deprivation. In: Hellmuth, Jerome, ed. Disadvantaged Child, Volume 1. Seattle, Washington, Special Child Publications, 1967, Chapter 3, p. 65-76.

Theory construction in education and psychology is discussed in terms of shifting from methodological considerations to human interaction. Learning as one aspect of human behavior not directly observable is measured by observing the consequences or performance of an individual. Theory is important in that it provides a focus on conditions that produce learning. The test of a theory involves the degree to which it relates predictably to specified variables. Testing and evaluation of theories is more complex than testing methods but reliability and validity are also major considerations in evaluation of methods in pedagogy. Development of spectacular or visible methods in education depend upon the skill and interactive ability of the originator as well as the social-psychological environment. Study of the children in relation to different educational environments is superior to the comparison methodological studies. Creativity and originality in teachers should be encouraged especially in preparation of curricula. Evaluation of methods using heterogeneous populations of teachers as well as children and placing them in a variety of settings may produce new concepts in human development and learning. (No refs.) - B. Bradley

Special Education Department
Boston University
Boston, Massachusetts

396 Wolinsky, Gloria F. Issues in curriculum development for the educable mentally retarded. Training School Bulletin, 64(1):5-11, 1967.

Educators will need to cope with the problems posed by universal education before adequate planning for the educational needs of EMRs can occur. Traditional educational approaches such as the child-centered approach, the child and adult in society approach, and the organized knowledge approach are limited by problems of definition, societal change, and the present reorganization of academic disciplines. The problems involved in EMR education are complicated and may not center on curriculum itself but rather on teaching goals and methods. Intellectual growth proceeds from a simple response to involved symbolic systems. Bruner's theory of instruction may prove useful in designing teaching methods to incorporate this principle. This theory stresses the provision of experiences which will motivate learning; the structuring of knowledge in order to simplify, generate new ideas, and increase efficiency; the development of effective material presentation sequences; and better understanding of the effects of nature and timing of rewards and punishments on learning and teaching processes. (4 refs.) - J. K. Wyatt.

Hunter College
City University of New York
New York, New York

397 Sievers, Dorothy J., & Suarez, Barbara F. Relevant factors in progress of children with mental and/or physical handicaps in a diagnostic-therapeutic nursery school. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 9 p. Mimeographed.

What factors in the child's developmental history, in the history of the family, and in the original diagnostic findings of the clinic might be related to his progress in the diagnostic-therapeutic nursery school program? Records of 55 children (34 boys and 21 girls) who had "graduated" from nursery school were analyzed. Children from larger families benefited more than those from smaller families. Significant emotional difficulties in other members of the family seemed to interfere with the child's progress. Progress in the school was found to be related to a child's ability to function within the normal range of intelligence. Children whose problems appeared to be basically neurotic did make progress. Variables which did not appear to have any significant relationship to the course of the development of the child in this program were: (1) age at entrance; (2) sex; (3) age of the mother at the time of the child's birth; (4) socioeconomic status of the family; (5) difficulty during pregnancy or at birth; (6) early developmental milestones; (7) physical and neurological factors. (No refs.) - C. M. N. Mehrotra.

Ferkauf Graduate School of
Humanities and Social Sciences
Yeshiva University
New York, New York

398 Smith, Herbert W., & Kennedy, Wallace A. Effects of three educational programs on mentally retarded children. Perceptual and Motor Skills, 24(1):174, 1967.

Ninety-six MRs (IQ range 50 to 80) were randomly assigned to 3 treatment groups to determine the efficacy of a comprehensive approach to education. The groups included: daily 45-minute instruction and attention in small special education classes, 45-minute treatment in small activity groups, and regular class atendance for all day with no special instruction or attention. No significant differences were evident between the pre- and post-treatment scores of the measuring instruments (California Achievement Test, Wechsler Intelligence Scale for Children, Vineland Social Maturity Scale, and Johnson's sociometric scale) administered in September 1961 and April 1963. Limitations of the study include: brief duration time, number of grade levels studied simultaneously, and insensitivity of the instruments to detect small changes in behavior. Despite this, findings agree with other research that the theoretical advantages of special education for the MR have not been clearly shown. (4 refs.) - G. Trakas.

University of Tennessee
Knoxville, Tennessee

399 Fitzgibbon, Walter C. Public school programs for the mentally retarded. In: Baumeister, Alfred A., ed. Mental Retardation: Appraisal, Education, and Rehabilitation. Chicago, Illinois, Aldine Publishing, 1967, Chapter 11, p. 274-304.

In order to provide comprehensive educational programs for MR children, schools must define their areas of responsibility and provide adequate services in these areas. Coordinated preschool and postschool programs in cooperation with other agencies can help provide some of the necessary services which are outside the function of the school. The achievement ability of MR children should not be underestimated. Program selection and presentation should reflect expectations for greater academic attainment and social adjustment. Program planning should allow for the differences which exist between EMR and TMR children. Flexible, non-graded track programs can be used to develop appropriate curricula for each group and to allow for within-group differences. Comprehensive and specific team teaching may be useful in implementing instruction. The training of MR teachers should be continuous and involve the cooperation of the teaching institution, the school system, and the teacher's professional initiative. Present educational provisions for EMRs include: regular classes with no special provisions, regular classes with consultatory services, regular classes with itinerant services, and special classes. Special education programs are organized according to developmental levels. Programs span a 3-year developmental period. The complete EMR sequence consists of preschool, primary, intermediate, advanced, and post-school levels. Public school programs for TMRs are more recent and less available than those for EMRs. These may include nursery schools, special classes, day care centers, and sheltered workshops. (160 refs.) - J. K. Wyatt.

Western Carolina College
Cullowhee, North Carolina

400 Bentzen, Frances. An interdisciplinary approach in the identification and education of slow learning Navajo children. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 26 p. Typed.

The identification and education of MR Indian children in New Mexico is described in terms of programs and the need for an interdisciplinary approach. Shiprock and San Juan boarding schools located on the Navajo reservation were used due to their proximity to the Shiprock Indian Hospital and their enrollment of 1,200 children ranging from beginner groups through junior high school. Most of the children enrolled in elementary boarding schools are educationally retarded due to cultural, social, and linguistic factors. This presents a major problem in identification of MR in this setting. The pilot project involved 5 phases: gross screening; behavior profiles for referrals; medical and clinical examinations; staffing; and instructional classification, organization, teacher training program, and final progress report. The original referral group consisted of 56 children, 34 boys and 22 girls ranging in CA from 7-0 through 14-10 years who had attended school from 1 to 8 years with an average school attendance of 4-3 years. Full scale scores on the Wechsler Intelligence Scale for Children ranged from 45 to 111 with an average of 68. Multiple criteria were used in assessment of MR and involved medical history, IQ, performance level, EEG, neurological data, and comprehension. The task of identification was interdisciplinary rather than restricted to any single discipline. There was almost a complete absence of behavior characteristics such as hyperactivity, perseveration, visual

motor handicap, poor orientation, and perceptual problems. Forty-seven children from the original referral group of 56 were enrolled in 4 special education classes in a boarding school complex. Small classes, competent teachers, specialized instructional methods, and supportive environment were felt to be major factors in this program. At the conclusion of the academic phase of the study, 21 children were no longer functioning as MR. The need to extend programing for exceptional Indian children is stressed. (4 refs.) - B. Bradley.

Bureau of Indian Affairs
Washington, D. C. 20240

401 Wallin, J. E. Wallace. The Early Development of Special Educational Facilities for Handicapped Children in the Delaware Public Schools. 1966, 30 p. $0.50. Copies available from author, 311 Highland Avenue, Lyndalia, Wilmington, Delaware 19804.

The state of Delaware began to assume responsibility for special education in 1841 when the legislature provided funds for the education of deaf, blind, and indigent children. In 1932, the Division of Special Education and Mental Hygiene was established. From 1930-1950, program development was hindered by lack of funds, lack of interest in new educational projects, lack of physical facilities, and concern over the deficit spending of World War II. The largest program appropriation made available during this period was $14,500. Early work of the Division included the adoption of admission standards for MR children and the use of case study procedures for assessment. In 1935, the position of psychoeducational examiner was established and Delaware became the first state to provide statewide facilities for audiometric testing. From 1935-39, private funds made possible the purchase of special educational equipment for MR classes; the development of statewide assessment service; and the introduction of a program involving the study, diagnosis, and assessment of referrals. In 1939, the legislature enacted a comprehensive mandatory special class law and in 1941 funds for its implementation were made available. During the 1940's, public funds provided for lip reading instruction, speech therapy, and the education of hard of hearing, deaf, crippled, speech defective, and other defective children. Since 1950, there has been a tremendous increase in federal, state, and private funds available for special education. The pressure exerted by organized parent groups and volunteer organizations as well as the affluence of our present society have been responsible for better funding. The yearly program appropriation now involves more than $2 million. (54 refs.) - J. K. Wyatt.

402 Segal, S.S. No Child Is Ineducable. Special Education--Provision and Trends. Oxford, England, Pergamon Press, 1967, 332 p. $5.50.

Since the passage of Great Britain's Education Act of 1944 there has been an increase in medical research, in special education teacher training, and in the number of special schools available for handicapped children. This Act made mandatory the provision of equal education opportunities for all children, and required local authorities to identify and make provisions for physically and mentally handicapped children requiring special educational treatment. The largest group of children requiring special education provisions are the educationally subnormal (ESN). The results of a 1964 survey of the range of educational provisions then available for ESN and severely subnormal children revealed a wide variance in school facilities, in the practices of local authorities, and in the skill and training of special education teachers. Only 20 percent of the teachers employed in training centers possessed special education qualifications. Recent medical discoveries have increased knowledge concerning the prevention, diagnosis, and treatment of handicaps. The greatest present need is for the development of better special education teacher-training programs which will produce well-trained, qualified personnel who can take advantage of this increased knowledge and provide better education for handicapped children. This summary of special education provisions and trends in Great Britain will be of interest to parents of handicapped children, volunteer organizations, special educators, psychologists, psychiatrists, social workers, and pediatricians. (213 refs.) - J. K. Wyatt.

CONTENTS: The 1944 Education Act; The Range of Provision; A Brief History of Special Education; How Many Children Need Special Education?; The New Spirit; Juvenile Delinquents; Provision for the Mentally and Educationally Subnormal in 1964; The IQ under Examination; Physical Conditions; Nature or Nurture; Some Social or Environmental Factors; Interdisciplinary Research; The Training of Teachers; Mental Handicaps and Disorders; The Physically Handicapped; Sensory Defects; The Socially Handicapped; Other Relevant Bodies; Towards a More Human Society; Postscript.

403 O'Neill, Ralph C. Programs for the mentally retarded in England. Mental Retardation (AAMD), 5(2):42-44, 1967.

Education and health acts have increased special education facilities in England. For the EMR, there are some residential schools and some special day schools which are financially better off than the programs in the regular schools. The classes are grouped in 3 stages beginning at age 8 and ending at 16 at which time employment or sheltered workshop training are available. The educationally subnormal (ESN or EMR) are defined in flexible terms; other factors besides IQ are considered, such as present functioning and secondary and neurological impairments. Special education teachers have access to the services of a wide range of specialists--therapists, psychiatrists, and social workers. The class size, by law, is never more than 20. At age 11 students transfer to secondary modern schools where they are partially integrated in physical education, typing, home economics, and shop. There are no special requirements for teachers of the retarded although approximately one-third have special education degrees. For the TMR, facilities are provided under the Local Health Authority and centers are staffed by adults with only high school educations. (3 refs.) - C. A. Pepper.

Novato School District
Novato, California

404 Rabinowitz, Arno. A nursery school in Shropshire. Special Education, 55(4): 30-32, 1966.

Description of a pilot unit and organization of a nursery school for educable handicapped children in Shropshire, England illustrates the need for this type service. Children range in CA from 2 to 9 years with the majority being between the ages of 3 and 7. The varying handicaps served include blindness and partial sight, spina bifida, psychoses, and cerebral palsy. The children are referred to the principal, usually at the age of 2, by the school health service. As soon as referral is made, a home visit is initiated by a social worker and the school principal. Upon entrance to the school the child is tested on a large battery of tests which are explained to the teachers and staff who can also observe them being administered. Approximately 30 children who attend the classes daily are divided into 2 groups according to the level at which they can cope with stimulation. Individualized teaching and therapy are emphasized and the teachers rely on a variety of educational methods. Children are reviewed regularly and the staff attends weekly meetings to discuss techniques of handling discipline and curriculum. Medical treatment is available on the school premises. This school emphasizes observation, assessment, and education of young handicapped children as well as aiding parents and implementing coordination of other services. (No refs.) - B. Bradley.

Katharine Elliot School
Shropshire, England

405 Johnson, Doris J., & Myklebust, Helmer R. Learning Disabilities: Educational Practices and Principles. New York, New York, Grune & Stratton, 1967, 336 p. $9.75.

The "clinical teaching" approach is a type of remedial learning treatment developed and researched at the Institute for Language Disorders at Northwestern University. The emphasis is psychoneurological. Since there is a distinction between children with learning disabilities and MR children, the educational objectives for these 2 groups should differ. The child with a learning disability falls within the normal range of intelligence, has an assumed normal learning potential, and evidences alteration of learning ability because of brain dysfunction. Some children classified as EMR are actually children with learning disabilities and, when social maturity is used as a criterion, the reverse is sometimes true. The "clinical teaching" approach emphasizes the individual assessment of each child. Principles to be considered are: integrities, deficits, tolerance levels, sensory processes, type of involvement, level of involvement, relationships between reception and expression, nature of verbal and nonverbal disturbances, readiness, and the need for assistance with total integration. Children with learning disabilities need special training for specific disorders. These may include disorders of auditory language, auditory expressive language, reading, writing, arithmetic, and nonverbal learning. This textbook is intended for use by special educators and specialists involved in the problems presented by children with learning disabilities. (187 refs.) - J. K. Wyatt.

CONTENTS: Learning Disabilities; The Brain and Learning; Special Education and Learning Disabilities; Disorders and Auditory Language; Disorders of Reading; Disorders of Written Language; Disorders of Arithmetic: Nonverbal Disorders of Learning; Implications and Outlook.

406 Hellmuth, Jerome, ed. Disadvantaged Child, Volume 1. Seattle, Washington, Special Child Publications, 1967, 499 p. $10.00

The disadvantaged population is extremely heterogeneous and requires a variety of approaches. This volume, directed toward professional workers who deal with the child from a disadvantaged environment, includes a variety of new programs and ideas from a relatively new field that has not, as yet, become rigid and stereotyped in orthodoxy. Two chapters are concerned directly with problems relating to MR but the contents of the remaining 17 chapters are applicable also. One study which focuses on familial MR indicates that retardation may be due to mild neurological impairment as well as psycho-social factors. Teacher education programs from a variety of cities are described and selected readings are listed as source materials. Factors which are considered barriers to learning (high risk babies, poor maternal care, inadequate perceptual stimulation, multiple mothering, and lack of verbal communication) are reviewed and educational programs to facilitate learning are described. Considerable emphasis is given to preschool programs. Difficulties as well as successful experiences in establishing some preschool educational programs are described in detail. Frequent illustrations, references, statistical data, case histories, and selected readings allow a comprehensive overview of some of the major concerns for the disadvantaged child. (876 refs.) - B. Bradley.

CONTENTS: Hypotheses Regarding the Effects of Child-Rearing Patterns on the Disadvantaged Child; Familial Mental Retardation--Fact or Fancy?; A Hypothesis of Theories and Methods in Special Education, Mental Retardation, and Cultural Deprivation; The Disadvantaged Child in School; Urban Education in the North; Education of the Culturally Deprived Child; Pedagogical and Psycho-Social Adjustment Problems in Cultural Deprivation; Innovations in Assessing the Disadvantaged Child's Potential; Some Essential Ingredients in Educational Programs for the Socially Disadvantaged; The Preparation of Teachers for the Disadvantaged; The Psychological Basis for Using Preschool Enrichment as an Antidote for Cultural Deprivation; The Relevance of Developmental and Psychodynamic Concepts to the Education of the Preschool Child; Prekindergarten Education for the Disadvantaged Child; Instructional Planning in Early Compensatory Education; Preschool Education and the Communities of the Poor; Reading Retardation: Psychiatric and Sociologic Aspects; Cognitive Competence and Level of Symbolization Among Five-Year-Old Children; The Social Context of Language Acquisition; Selected Readings on the Disadvantaged Child.

407 Kugel, Robert B. Familial mental retardation--fact or fancy? In: Hellmuth, Jerome, ed. Disadvantaged Child, Volume 1. Seattle, Washington, Special Child Publications, 1967, Chapter 2, p. 43-63.

An analysis of 16 lower class families and their MR children indicated that familial MR is not homogeneous and is due to a multiplicity of factors. A 5-year study of familial MR was conducted at the University of Iowa and included 16 index children, their 93 siblings, and 32 parents. An enrichment program was conducted in an experimental school which the 16 index children and 21 siblings attended for 1 to 3 years. Major factors involved multi-discipline study from medical, psychological, social, and educational points of view and an intensive program of environmental enrichment for children with CA's from 3 to 8 years. Criteria for acceptance in the study were: (1) lower socio-economic class based on the Warner Scale, (2) 1 or more of the parents regarded as MR based on standardized tests, (3) 1 other sibling considered MR (Binet IQ 50-85), and (4) exclusion of children with gross neurological or biochemical findings. Prenatal disorders, perinatal complications, and postnatal difficulties were more prevalent than in the general population. A considerable number of these children had some degree of encephalopathy and CNS aberrations were contributing factors in at least half of the cases. Familial MR may be produced by a biological disorder, a psycho-social disorder, or a combination of both. Data did not suggest that this type of MR is hereditarily determined. Environmental stimulation is effective with these children at the 3- to 4-year age level. (22 refs.) - B. Bradley.

University of Nebraska College
of Medicine
Omaha, Nebraska

408 Jones, Reginald L. Special education teaching in the occupational structure. Journal of Special Education, 1(1):67-70, 1966.

Special education teaching stands high in the occupational structure in terms of prestige as rated by 203 (117 girls and 86 boys) junior and senior high students in a west-coast, middle-class community. The Ss were asked to rate on a 9-point scale the standing and prestige of 64 occupations which included 17

special education fields, 18 regular teaching fields, and 29 other fields. Analyses, for both boys and girls, revealed that special education fields carry above average prestige although boys consistently rated these fields lower than girls. Factor analysis uncovered a special education factor for girls, along with a regular class teaching factor, with the gifted having significant loading on both factors. Factor patterns for boys were psychologically meaningless. In terms of rating, lawyers rated the highest followed by congressman, governor, and professor. (2 refs.) - M. E. McKee.

Ohio State University
Columbus, Ohio

409 Mann, Lester, & *Phillips, William A. Fractional practices in special education: A critique. Exceptional Children, 33(5):311-317, 1967.

The present attempt in special education to fractionate behavior has epistemological and empirical faults. Historically termed "the clinical approach," it places current emphasis on discrimination and manipulation of precise variables as well as the difficulties of treating the handicapped child. The basic assumption of the fractional approach is that behavior can be separated into units, evaluated, and exercised independently. Evidence does not support this assumption. Psychological assessment also has failed to establish "primary mental abilities." The special education fractionator presumes that test behaviors are directly related to the basic events or variables. Retitling passes for construct validity. Special education is concerned primarily with teaching and fractionators offer techniques to remediate weak areas. Most fractional approaches are too simple for the interactional, hierarchial, and discontinuous complexity of human development. Factor analysis supports fractional practices but factors are only statistical artifacts. Concurrent validity studies also support the fractional position, but the problem of base rates has been ignored. Fractionators profess to assess functions and dysfunctions. However, differential patterns from fractional tests cannot be assumed to represent functions. Their value cannot be demonstrated through tests which closely resemble the training devices themselves. Hawthorne and placebo effects must be considered. Traditional, productive assessment tools and the concept of total behavior are presently the most effective approaches in special education. (50 refs.) - R. D. Perkins.

*Eastern Pennsylvania
Psychiatric Institute
Philadelphia, Pennsylvania

410 Reynolds, Maynard C. Fractional practices in special education: A reaction. Exceptional Children, 33(5):317-318, 1967.

A critique presentation has failed to put the fractional approach of special education in a better perspective. In the classical framework, tests are viewed as devices for quantifying attributes and for predicting. Decision theory framework in which a test produces significant interaction effects with methods is more relevant. General tests which predict well within methods do not help to choose between methods. Teachers must fractionate to make judgments about specifics. Admittedly, diagnostic excesses sometimes are used to cover limited knowledge of methodology. However, the position of competition between general and fractional approaches fails to view problems of general assessment and prediction as distinct from instructional problems. (1 ref.) - R. D. Perkins.

Department of Special Education
University of Minnesota
Minneapolis, Minnesota

411 Mann, Lester, & *Phillips, William A. Fractional practices in special education: A critique. A reply to Reynolds. Exceptional Children, 33(5):318-319, 1967.

The primary issue in the authors' critique was the practical value of fractional approach tests and training in special education, rather than any particular psychometric position on the use of tests to guide educational practice. Behavior is complex and variable and developers of pure narrow instruments are to be saluted, although the consequences of their work often cause dismay. (2 refs.) - R. D. Perkins.

*Eastern Pennsylvania
Psychiatric Institute
Philadelphia, Pennsylvania

412 Watts, Betty H. The educational difficulties of the socially deprived child. In: Australian Group for the Scientific Study of Mental Deficiency. Proceedings of the Fifth Annual Interstate Conference on Mental Deficiency. Van Pelt, J. D., ed. Brisbane, Australia, October 1966, p. 41-47.

Promising guidelines for further educational development of the MR will arise from the study of the socially or culturally deprived. Any group facing educational difficulties is worthy of study; such studies should help indicate how the environment influences human development, how to manipulate the educational environment to the best advantage, and how to deal more effectively with the educational needs of the MR. The educational characteristics of the culturally deprived are seen in their attitude towards learning and their aptitude for achievement. In regard to the former, they may appear anti-intellectual pragmatic, traditional, superstitious, inflexible, not open to reason, passive in the face of authority, and lacking in individualism, introspection, self-orientation, self-expression, and a positive self-concept. In terms of the latter, they display impoverished language development resulting in limitations in concept formation, abstract reasoning, and the handling of cognitive tasks. Positive educational approaches include a preschool program, a language development program and a guidance program. (7 refs.) - A. Huffer.

University of Queensland
Brisbane, Australia

413 Guerin, Gilbert R. Special classes or resource rooms? Mental Retardation (AAMD), 5(1):40-41, 1967.

To facilitate better educational experiences for the EMR and to prepare him for life in the community, 2 alternatives are offered--special classes or resource rooms. Since it is believed that education is restricted by segregation, recent stress is toward integrating the EMR into regular classes at both the elementary and secondary levels. In the resource program the integration would be partial; a committee would make assignments and also decide amount of time and subject(s) to be taught. Realistic goals would be set, (slow growth should be expected) and regular classroom and resource teachers could work together to provide the necessary flexibility. (No refs.) - G. Trakas.

Novato Unified School District
Novato, California

414 Hammar, S. L. School underachievement in the adolescent: A review of 73 cases. Pediatrics, 40(3, part 1):373-381, 1967.

Scholastic underachievement in adolescents can be classified according to psychogenic factors, specific learning defects, or MR. Seventy-three adolescents (ages 12-18 years), referred because of underachievement, were given complete medical, neurological, EEG, and psychological examinations. Most had had scholastic problems recognized since the third grade. Males were 4 times as common as females. Eighteen percent had IQs below 80. Twelve of 25 with suspicious medical histories had abnormal EEGs. Of the 38 demonstrating minimal brain dysfunction or "soft" neurologic signs, 25 were noted by the physicians and 29 by the psychologist ($r = .76$). School underachievement is rarely an acute problem and is often related to underlying causes such as neurologic deficit, sociocultural problems, or family discord. Treatment requires specific therapy aimed at the primary factors. (15 refs.) - W. A. Hammill.

University of Washington
Seattle, Washington

415 Allen, Benjamin H., & Foshee, James G. SWEAT, 1966 Summer Work Experience and Training in mental retardation facilities. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 15 p. Mimeographed.

A Summer Work Experience Program, SWEAT, was evaluated to determine changes in attitudes for the purpose of increasing recruitment of personnel in the field of MR. This program offered a wide variation in experiences with MR persons and involved work with professional and technical personnel. The students ranged in CA from below 16 to 30 with educational levels extending from high school juniors (or below) to post graduates. The majority of students were females below the age of 20. Work experiences described as consisting of both "good" and "poor" programs were established in 63 locations in 33 states for approximately 700 students over a 2-month period in 1966. The design of the evaluation included a pre- and post-evaluation of 3 groups of students and a group of professionals. The groups were divided as: (1) E group involving SWEAT students tested by trained personnel, (2) students who did not work in MR facilities during the summer, (3) SWEAT students tested by someone connected with the program and (4) 48 professional persons in the MR field. Evaluation involved

subjective observation and interview method and a objective paper-pencil test. Measures of information and knowledge, and career choices were obtained. A 5-year follow-up study is planned to determine actual career choice. The students in the summer work program increased their knowledge of MR while the control group did not change in their knowledge. Students seemed to respond more favorably when they had contact with professional persons rather than cottage parents and aides. Data indicate that many more students change their vocations to the field of MR; opinions become more positive as a result of this program. The SWEAT program is achieving its goal of affecting a positive approach in aiding the recruitment of needed personnel in the field of MR. (No refs.) - B. Bradley.

Florida State University
Tallahassee, Florida

FACILITIES, CURRICULAR PROVISIONS, MATERIALS, AND METHODS

416 U. S. Indian Affairs Bureau. An Interdisciplinary Approach in the Identification and Education of Mentally Retarded Indian Children, Addendum. Washington, D. C., U. S. Interior Department, Indian Affairs Bureau, Education Branch, 1966, 45 p.

A group of 47 rural, disadvantaged Navajo children with severe learning and social problems (selected by an interdisciplinary staff) made sufficient social, emotional, and academic gains by attending special classes for 1 year in a regular boarding school of the Bureau of Indian Affairs (BIA). The teachers modified the curriculum for their use and also developed some instructional material and teaching guides. However, no special provisions were made for out-of-school activities or dormitory living. One of the important objectives was to offer each child an opportunity to see himself as worthwhile. Wechsler Intelligence Scale for Children (WISC), Porteus Maze (PM), Bender-Gestalt (BGT), Goodenough-Harris Draw-A-Person Test (DAPT), Thematic Apperception Test (TAT), and Stanford Achievement Test (STAT) were used as pre- and post-tests. DAPT was found to give the most sensitive measurement of conceptual growth and maturation. WISC was useful in estimating the abilities necessary to learn and solve tasks required by a particular school environment. BGT and PM were helpful during the diagnostic period in pinpointing visual-motor and visual-perceptual problems. The Ss gave very few responses to TAT. Gains on STAT and DAPT were significant. Special classes should be located in regular boarding schools of the BIA rather than in a special school setting. Special staff should be provided in these schools or a diagnostic center manned by a full-time interdisciplinary staff should be established therein. This pilot study has established guidelines and procedures which are appropriate for the implementation of an overall program for exceptional children. (9 refs.) - C. M. N. Mehrotra.

417 Hollis, John H., & Gorton, Chester E. Training severely and profoundly developmentally retarded children. Mental Retardation (AAMD), 5(4):20-24, 1967.

The goals of training programs for severely and profoundly MR children should center around education for life in the community rather than around care and management. An overview of recent research findings in the areas of prosthetic training, operant imitation, social reinforcement, aversive stimulation, feeding training, toilet training, language development, and behavioral engineering suggests operational models, concepts, and procedures for the development of realistic training program curricula. Workers in the area cannot in good conscience ignore these techniques. (52 refs.) - J. K. Wyatt.

Bureau of Child Research
University of Kansas
Lawrence, Kansas 66044

418 Heavey, Ron. Teaching the mentally handicapped child. Teaching and Training, 5(2):35-39, 1967.

MR children must continually receive experiences which stimulate interest. They cannot be taught in a formal atmosphere. Each child needs individual teaching in an active environment. He should be encouraged to relate experiences through painting, model making, dramatic play, drama, and musical activities. The teacher must be aware of the interests of the MR and utilize these interests in teaching. Also, the teacher must have a thorough knowledge of child development. The principal must have good staff relations, be able

to delegate work, encourage staff to use talents, have good liaison with all school connected services, and be aware of all neighborhood facilities which will benefit staff and students. (No refs.) - M. E. McKee.

Mill House School
Newton-Le-Willows, England

419 Happ, F. William. To meet the educational needs of the trainable retarded. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 5 p. Mimeographed.

Thinking and learning of the TMR occur in a concrete, and object-connected manner. This type of thinking is phase-specific and transitory for the normal child of pre-school age but for the majority of trainable retardates it is the terminal status. Concrete and practical methods of teaching and learning, therefore should not be considered initial, temporary, or inferior in comparison with the abstract and theoretical approach. Unless this attitude is developed it will not be possible to do much for establishing pre-vocational and vocational learning opportunities for the trainable retarded appropriate to his particular needs. Teaching procedures for the trainable retarded should be based on an object oriented and concrete approach. Teaching aids should be used in an organized manner so that the TMR is exposed to graded stimuli. Didactic materials should be offered in successive steps adapted to the child's changing skills. As verbal expression and comprehension of the TMR is quite restricted, directions should be given in a plain and brief manner. In view of his short attention span one should start by giving him simple, unassuming assignments which can be completed with little effort in relatively short time. It is important for the teacher to see that the child learns how to organize his attention. Teaching and training effort should comply with the natural sequential phases in the development of human behavior. (No refs.) - C. M. N. Mehrotra.

Laradon Hall School for
Exceptional Children
Denver, Colorado 80216

420 Buist, Charlotte. Helping parents assist children with intellectual development through specific recommendations of play objects. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 10 p. Typed.

Parents can utilize toys and games to promote the development of a child's skills and thus can supplement what is being done in school. This is especially important because due to shortage of trained personnel the child gets a limited period of tutoring. After reviewing a number of toy catalogs, a toy manual has been compiled. This manual uses a classification scheme in which all the functions are divided into 4 major categories: perception, retention and recall, conceptualization, and expression. Perception is subdivided into visual and auditory, each of which is divided into the following categories: (a) like-difference; (b) part-whole relationships; (c) spatial relationship; (d) figure-ground. Retention and recall is subdivided into auditory and visual memory. Expression is subdivided into verbal and motor. Motor functions are further subdivided into fine motor activities and gross activities. This scheme includes only those functions that can best be represented by toys and games. In the manual each toy is reviewed under each of the appropriate categories and arranged in ascending order of difficulty. "Each listing also includes an abbreviation of the manufacturer's name, an opinion as to which sex might be interested in the toy, the general age level of interest among normal children, and a brief description of the toy." For effective use of toys it is necessary that a differential diagnosis first be made so that one can know the areas of deficit for which the child needs remediation. Copies of the relevant pages from the toy manual can then be given to parents after careful explanation as to use. The nurse should make follow-up visits to see that the toys are being used appropriately and that the child is making satisfactory progress. (No refs.) - C. M. N. Mehrotra.

Institute for The Study of
Exceptional Children and Adults
De Paul University
Chicago, Illinois

421 Abbatt, Paul. New toys for the handicapped. Special Education, 55(4):12, 1966.

New toys designed especially for handicapped children are described in terms of their goals--to improve both motor skills and intellectual abilities. The basic element of one toy is a gridboard forming a regular structure of grooves and holes to form a framework for building with pegged bricks.

It makes the building and play arrangement stable so that involuntary movements of motor handicapped children will not upset their structure. Also, threading toys are available for those who are disorientated in space. Enlargement of certain toys such as mosaic pieces are being completed. These toys are now available in England for the first time and are being produced by the Abbatts. They are described in detail in a recent book, Practical Training for the Severely Handicapped Child, by Milan Morgenstern and associates. (No refs.) - B. Bradley.

422 Santostefano, Sebastiano, & Stayton, Samuel. Training the preschool retarded child in focusing attention: A program for parents. American Journal of Orthopsychiatry, 37(4):732-743, 1967.

Thirty-one mothers of MR children were taught to administer a training program which generally supported the hypothesis that training in focal attention will result in advancing the efficiency of cognitive abilities. The MR children ranged in age from 3.5 to 7.8 years and were severely to moderately retarded. Thirty-two MR children were selected as controls. Before and after training, each child was given a battery of 5 tests especially selected to test cognitive functioning and other behavior of MR children. The training program in focal attention used a magnetic board with black and white square, circle, or triangle cutouts that could be used in solving increasingly complex problems. Mothers primarily used pantomime, demonstration, and physical guidance to communicate expectations to the child. The experimental and control groups scored very close to each other on the tests prior to training. After training, the experimental group scored significantly better on every test except the Body Imitation Test. The experimental group showed a greater capacity to assimilate and use guidance. The view that training in early cognitive function and focal attention generalizes to improve higher functions is supported. This has implications for the education of MR children and challenges the view that retardation means organismic arrest. (17 refs.) - R. Froelich.

Worcester Youth Guidance Center
Worcester, Massachusetts

423 Malpaas, Leslie F. Programmed instruction for retarded children. In: Baumeister, Alfred A., ed. Mental Retardation: Appraisal, Education, and Rehabilitation. Chicago, Illinois, Aldine Publishing, 1967, Chapter 9, p. 212-231.

When used as an aid in the classroom, programmed instruction (PI) for MR children is a valuable educational tool which allows for individualized instruction. The principles on which PI is based are small steps, active responding, immediate confirmation, self pacing, and program testing. PI should be used in conjunction with specific goals and as a part of a predetermined educational objective. PI devices include teaching machines and programmed textbooks. Selected response and constructed response teaching machines use auditory and/or visual signals to inform pupils about response correctness. Programmed textbooks used with MRs include the linear and scrambled type. These programs have developed better work habits and facilitated the learning and retention of highly complex word skills and basic arithmetic processes and concepts. Outside the classroom, they have been instrumental in the development of personal, social, and vocational skills. (52 refs.) - J. K. Wyatt.

Virginia Polytechnic Institute
Blacksburg, Virginia

424 Brown, R. I., & Bookbinder, G. E. Programmed reading for spastics. Special Education, 55(4):26-29, 1966.

A programmed reading technique designed for use with spastics is described in terms of method, rationale, modification, and problems involved in its application. This method devised to reduce failure experiences includes a series of 40 cards. The first 10 cards introduce single letter sounds while the subsequent cards deal with the digraphs. The letters and digraphs are immediately built into words and words are introduced with the first card. Overlearning is built into the program. A brief tape is used to tell the child the letter sounds which he is required to repeat. The child is given information that he can see and hear and is informed of the correct response. The tape is continuous but seldom lasts more than 15 minutes. A pilot group of 27 subnormal persons ranging in CA from 8 to 49 years improved their average reading age from 5.1 to 5.8 years over a period of 3 months of daily 10- to 15-minute sessions, 5 days a week. Ten of them made

over 1 year's progress on the Burt Word Recognition Test. Improved attitudes and increased motivation are considered to be major benefits of this method. Special problems in applying this program with spastics involved speed of the tape used; auditory material should be presented more slowly for the majority of spastic children. Size of print had to be enlarged and 1 line was presented at a time. Specific training to overcome perceptual difficulties using other types of materials was successful. (3 refs.) - B. Bradley.

Institute of Education
Bristol, England

425 Jordan, Laura J. Building the readiness program. Mental Retardation (AAMD), 5(2):28-31, 1967.

A child, if placed in a suitable program early will not have to go through the remedial readiness program which should allow for more efficient learning. Introductory reading is divided into methods which emphasize sight vocabulary, phonics, and experience charts. Comprehension is the goal and is generally reached by 2 methods--learning based on the familiar and known, and learning that proceeds in short, easy steps. To be meaningful, words taught must be related to everyday experience and then practiced. Instructions should vary, gesture and demonstration may be used in order that the child will understand in a generalized manner. Retardates often depend on rote memory, but cognitive skills should be trained through such techniques as absurdities, inductive and deductive reasoning, recognizing whole from parts, and categorizing. Both adequate language and cognitive skills are essential to success in reading. (8 refs.) - C. A. Pepper.

Department of Special Education
University of Illinois
Urbana, Illinois

426 Peter, Laurence J. Prescriptive Teaching. New York, New York, McGraw-Hill, 1965, 246 p. Price unknown.

A practical program is presented which translates diagnostic findings into educational implementation for children having learning disabilities (MR, brain-injured, physically handicapped, slow learner, emotionally disturbed). Prescriptive teaching employs a multi-disciplinary approach of diagnosis of disabilities, determination of educational relevance of disabilities, and the devising of individual teaching procedures to yield desirable change in a child's academic progress and emotional and social adjustment. The prescriptive teaching circuit includes referral, reporting, implementation, and follow-up phases. A 3-dimensional model has been constructed to aid in relating factors in the total life situation of the child to those relevant to educational planning. Main dimensions of the model are: (1) problem variables, (2) situation variables, and (3) school variables. School variables include consistent approach, teaching methods, specific objectives, ancillary services, placement, personnel, subject matter, instructional materials, special equipment, school plant, and auxiliary agencies. Although the book is addressed to school psychologists, counselors, and others responsible for converting diagnostic findings into recommendations for teachers, it will be of interest to parents, teachers, and those professionals interested in children and their education. (248 refs.) - M. E. McKee.

CONTENTS: Introduction; The Principle of Structure in the Learning Process; Diagnosis; Translating Diagnostic Findings; The Education of Exceptional Children; Three Examples of Teaching Prescriptions; Communication; Teaching; Follow-Up; Conclusions.

427 Morgenstern, Milan, Löw-Beer, Helen, & Morgenstern, Franz. Practical Training for the Severely Handicapped Child. London, England, William Heinemann Medical Books, 1966, 134 p. $2.94.

This English translation of a German edition published 30 years ago describes a teaching method aimed at the individual education of TMR and SMR children. The method is based on the belief that these retardates will follow the normal developmental stages at a pace which will correspond to their special physical and intellectual limitations. After developmental potential has been assessed, specific educational goals need to be determined for each child. The teacher's initial role is to make contact with the child, bring him out of his isolation, and help him to become interested in his environment. The development of verbal and/or nonverbal communication between child and teacher is important because it fosters emotional rapport and instructional reinforcement procedures. Specific educational procedures emphasize the redirection of primary drives away from unacceptable or harmful means of expression toward useful and productive expression. The

various skills involved in specific activities are analyzed so that the teacher can become aware of the pupil's interests, abilities, and limitations. Resistance is not a sign of failure but rather is an indicator that the teaching approach must be changed. A variety of techniques can be used to bring about educational improvement with SMR children. These techniques depend on the special needs of the individual child and their value cannot be predicted in advance. The book is intended to provide guidance for parents and teachers of TMR and SMR children. The appendices include: 3 case histories; a listing of materials used in therapy; 2 examples of analyzing steps in a given activity; and illustrations and descriptions of 49 items developed to improve the child's psychomotor abilities. (5 refs.) - J. K. Wyatt.

CONTENTS: Therapeutic Concepts; The Material and Its Manipulation; Language; Occupational Material; Psychological Considerations; Practical Achievements of the Work.

428 Downing, John. The effects of the initial teaching alphabet on educationally subnormal pupils--a survey of teachers' reports. Slow Learning Child, 13(3):164-175, 1967.

A survey of 25 schools for educationally subnormal (ESN) children reveals that teachers favor the use of the initial teaching alphabet (i.t.a.) as a means of improving reading skills, elevating self-confidence and increasing motivation. The simplicity and regularity of i.t.a. may be instrumental in reducing the "general cognitive confusion" which is often a reading deterrent for ESN children. The teachers felt that the children made an easy transition from i.t.a. to traditional orthography (t.o.). Available test data show that reading ability at time of transfer is better in i.t.a. than in t.o. However, there is an overall improvement in t.o. achievement. I.t.a. does not help all slow learners. Controlled scientific research aimed at discovering the specific effects of i.t.a. instruction, the types of slow learners with which i.t.a. is most beneficial, and the ways in which i.t.a. can be improved is needed. (10 refs.) - J. K. Wyatt.

Reading Research Institute
University of London
London, England

429 Downing, John. E. S. N. school teachers assess i.t.a. Special Education, 56(1):12-16, 1967.

Subjective and objective data show that there is a consensus among remedial teachers working with the initial teaching alphabet (i.t.a.) in 25 schools for the educationally subnormal (ESN) that this method and its transition to traditional orthography (t.o.) is beneficial for the MR. Improved attitudes and motivation and reduction in cognitive confusion were the most frequent reasons given for advantages of i.t.a. When test instruments are written in i.t.a., better results are experienced by these children. However, there is a variance of agreement on the effect of i.t.a. in written and oral behavior. The i.t.a. method is not a panacea and since some of these children do not succeed by other methods (look-say, phonics), it is of little consequence. The background to this survey results from the original experiment in 1961 with elementary school children in Great Britain. (10 refs.) - G. Trakas.

Institute of Education
London University
London, England

430 Lytton, H. Follow-up of an experiment in selection for remedial education. British Journal of Educational Psychology, 37(1):1-9, 1967.

Some children benefit considerably from remedial teaching and, especially in reading, maintain a large part of their gains after remedial teaching has ceased. Primary school children in remedial reading (97 Ss) and remedial arithmetic (37 Ss) were followed for 1 to 2 years after leaving the remedial group. As analysis by sex showed boys and girls to have virtually identical criterion scores; their results were combined for all analyses. In reading, selection by tests and selection by teacher's judgment did not produce significantly different long term results. However, in arithmetic, higher gains were associated with test selection. In both reading and arithmetic, the IQ is a good pointer to relative success in remedial work. In reading--as opposed to arithmetic--even the children with below average IQ (63-84) make worthwhile progress and maintain some of it during the follow-up period. Within the low IQ group, children with high achievement quotients (reading) succeed much better than those with low achievement quotients. The children in the secondary school at the time

of follow-up lost more of their gains in reading than those in the primary school. Apparently, teaching in the secondary school is geared less to the basic skills and to these children's difficulties. Maladjustment related inversely to long-term gains due to remedial teaching. (6 refs.) - C. M. N. Mehrotra.

University of Exeter
Exeter, England

431 Green, Sister Mary Isabelle. An introductory study of teaching handwriting to the brain injured child. Exceptional Children, 34(1):44-45, 1967.

Twenty-four brain injured Ss (CA, 9-15 years; IQ, 50-89) were studied to determine their adequacy in handwriting skills. The immediate aim was to produce legible handwriting with the ultimate goal of determining the utility of teaching writing to brain injured EMR. Because of their short attention span, class periods were 10-15 minutes in duration. Motor coordination drills were utilized to develop writing readiness and physical activities were applied in order to develop large and small muscles. These methods were correlated with the physical education program and other classroom drills. The kinesthetic method was the best approach in teaching handwriting, the "Colorgraph" was the most effective teaching device, and cursive writing satisfied a need for the brain-injured child. Further research is needed. (2 refs.) refs.) - G. Trakas.

St. Michael Special School
1522 Chippawa Street
New Orleans, Louisiana 70117

432 Toombs, Lawrence E. Education and behavioral modification through the use of closed-circuit TV. Project News of the Parsons State Hospital and Training School, 3(3):1-5, 1967.

The usefulness and effectiveness of closed-circuit television is demonstrated as it relates to communication and incentive to bring about personal and social behavioral changes with subsequent education and entertainment of patients. The 16 girls involved evidenced positive changes in education and behavior in the 3 weekly 15-minute programs. Each program offered 5-minute segments of entertainment, education, and emphasis on positive aspects of individual patient behavior. The staff ad-libbed the entertainment segment using a 'talking' rabbit and crow not only to entertain but to use this time as a buffer for the other 2 segments. The education program presented 12 5-minute series of telling time and was structured to correspond with the activities of the girls at that particular time of day. Past tests showed behavior improved as the girls performed their duties which ranged from making beds to not sucking a thumb. A cottage checklist was utilized to monitor this. The MRs showed great interest in this media of communication but further research is needed to develop its full potential. (No refs.) - G. Trakas

No address

433 Cassidy, M. Frances. Health education for the mentally retarded. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 5 p. Typed.

Health education programs for MR children should emphasize instruction in personal hygiene, nutrition, disease cause and prevention, sanitation, rest and relaxation, posture, appropriate clothing, and safety. In addition to providing MR children with factual information about good health practices, the special education teacher must be sure that the children know how to put this information into practice. She should provide opportunities for the practical application of health information and for meaningful experiences which will motivate the children to develop good health habits. (No refs.) - J. K. Wyatt.

Colorado State College
Greeley, Colorado

434 Ellis, A. The "Zulu" project. Teaching and Training, 5(1):7-11, 1967.

Preparations to entertain 12 MRs from a training center on board the frigate HMS Zulu were possible through efforts of a friend of the school who was serving the ship as a naval mechanic. Prior to the visit, the children experienced a ride on a bus and airplane and ate in a public restaurant. The crew, costumed as pirates, entertained with the aid of a sister ship, HMS Mohawk, whose crew dressed as red Indians. After "tea" and full access to the ship, an evaluation showed that MRs can adjust to situations as well as normals and that such experiences afford the opportunity for the MR and the public to meet. (No refs.) - G. Trakas.

No address

435 Smith, Carolyn. The tape recorder in the EMR classroom. Mental Retardation (AAMD), 4(6):33-35, 1967.

Experience with the use of a tape recorder in teaching educable retardates is reported. Equipment included the Wollensak T-1500 tape recorder, 8 PME earphones, 3 jack boxes, and an extension cord at a cost of $258.61. Listening rooms were improvised at little further cost. The chief advantage of this teaching aid is in the engineering of attention. The booths and headphones eliminate distraction and provide a more intensive stimulus. A second advantage is that unisensory or multisensory teaching techniques can be used, and a third advantage is that a direct learning situation is provided which can be handled by the students, freeing the teacher for individual or small group work. Activities in which the recorder can be used include: (1) arithmetic--vocabulary, number dictation, basic mechanics, and mental problems; (2) language arts--auditory discrimination following directions, listening comprehension, taking dictation, reading, word recognition, writing, spelling, memorization, stories, and speech improvement; (3) science and social studies--factual material and tests; (4) music; and (5) testing. (3 refs.) - J. Snodgrass.

Appalachian State Teachers College
Boone, North Carolina

436 Stapleton, M. The tape recorder in the E.S.N. school. Forward Trends, 10(3):77-81, 1966.

The tape recorder can be utilized to aid the communication, socialization, and evaluation of MR children. It has been used with the educationally subnormal (ESN) to help them concentrate on listening for longer periods of time, and to memorize poems, stories, and patterns of speech. Emphasis is placed on using words and time economically and effectively, eliminating mistakes, and ensuring successful learning. (No refs.) - L. Clevenger.

No address

437 Acuff, Charles F. A many faceted music program for the mentally retarded. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 7 p. Mimeographed.

The musical program of the Arkansas Children's Colony is presented with emphasis on the new instrumental band program. The objectives are: (1) develop a marching band; (2) develop muscular coordination; (3) develop group activity and social awareness; (4) develop reading awareness with the names of the musical notes; and (5) develop arithmetical awareness through number and counting involved with rhythm. Admittance to the marching band was open to all residents regardless of ability, IQ, age, or type of instrument. There are 91 (total residents 740) students in the instrumental music program. Success of the program has witnessed improvement in physical aspects of several cerebral palsied children, improvement in social-emotional development within "therapy" classes, and an increase in musical awareness for all residents. Music reaches the profoundly retarded and non-ambulatory resident with successful use of marching bells. The musical program demonstrates, through learning and participation, that the MR can add benefits to their total development. (No refs.) - J. Melton.

Arkansas Children's Colony
Conway, Arkansas

438 Goodnow, Catherine C. Dance therapy with the mentally retarded. Project News of the Parsons State Hospital and Training Center, 3(5):3-9, 1967.

The music therapy program at Parsons State Hospital and Training Center includes 2 major types of dance--folk (square) and modern. Retardates are grouped according to level of adaptive behavior and intellectual level. Goals and emphases vary with the level of the group, but there is considerable overlap. Dance therapy is used as a setting in which a variety of learning experiences can be provided. These experiences range from learning simple body movements to improving self-image and, in the case of modern dance, creative self-expression. In addition to providing the opportunity for learning social and personal skills, this program can lead to the establishment of a useful and rewarding leisure time activity for some retardates in community dance groups. (No ref.) - E. R. Bozymski.

Parsons State Hospital and
Training Center
Parsons, Kansas

439 Hill, Suzanne D., McCullum, Alva H., & Sceau, Anthony G. Relation of training in motor activity to development of

right-left directionality in mentally retarded children: Exploratory study. Perceptual and Motor Skills, 24(2):363-366, 1967.

To study the effectiveness of a systematic program of exercise on the development of retarded children's concept of left-right directionality, 14 children (CA 8-15, IQ below 70) were randomly divided into 2 groups. Both groups participated in a program of activities including: Frostig visual perception materials, oral and motor responses to visual communication and physical exercises, and games for 20 minutes a day for a 4-month period. The experimental group was given verbal labels for directionality, while the control group was not. In both groups, the number of errors on the post-test was significantly less ($p < .05$) than the pretest with improvement approximately equal. This suggests that the concept of left-right directionality is not due to a deficit in verbalization per se, perhaps because these retardates were still in the process of developing sensori-motor schemas with regard to spatial relationships. (7 refs.) - C. A. Pepper.

Louisiana State University
New Orleans, Louisiana

440 Richardson, Hilda. Organization and implementation of the Title 1 grant at PSH&TC. Project News of the Parsons State Hospital and Training Center, 3(3):9-11, 1967.

In 1967 a program under Title 1 (Elementary and Secondary Education Act, Public Law 89-10) was organized into 3 areas: self-care, leisure time, and language development. The first part attempted to teach the profoundly retarded to take part in programs, and prepare him to return home. By raising the skill level of this child it frees the psychiatric aide of some of the duties and allows him time for additional training. In the leisure time segment the TMR attempts better coordination, socialization, group participation, and listening skills. The program includes swimming, wiener roasts, learning to read directions, making change, and operating a coin machine. The language development program is designed to develop adequate communication to serve individual needs. Goals for the more able are geared toward making a community transition through stressing self-help. Title 1 personnel are students training to teach in special education or related fields. The teacher training project also includes pre-vocational training with the MR, emotionally disturbed, and the brain damaged child. A total of 551 children are enrolled in this program. (No refs.) - G. Trekas.

Parsons State Hospital and
Training Center
Parsons, Kansas

441 Ohio. Education Department. Guidelines: Work-Study Programs for Slow Learning Children in Ohio Schools. Crawford, William L. Columbus, Ohio, Superintendent of Public Instruction, 1967. 50 p.

The addition of work-study programs for high school aged EMRs to special education curricula in the state of Ohio has proven to be a most effective means of providing realistic, practical job-training experiences. Preparation for employment of EMRs should include the development of healthy attitudes, muscular coordination, acceptable appearance, adequate communication, ability to get along with others, ability to self-structure, ability to work with minimum supervision, and work tolerance. Factors which affect the success of work-study programs include: (1) student, parent, school, and community preparation; (2) community understanding and involvement; (3) teacher involvement in curriculum planning and development; (4) administrative understanding and support; and (5) the professional quality of work-study coordinators. This recent survey of some work-study programs in Ohio includes information on both rural and metropolitan programs and should be of use to school administrators, supervisors, and teachers. (23-item bibliog.) - J. K. Wyatt.

CONTENTS: Introduction; Curriculum Implications for Work-Study, Primary-High School; The Work-Study Coordinator; Pre-Planning for Work-Study; Program Development; Legal Aspects of Employment; Administrative Responsibility in Work-Study; Conclusions and Recommendations; Bibliography, Appendices.

TEACHING PERSONNEL

442 Efron, Rosalyn E., & Efron, Herman Y. Measurement of attitudes toward the retarded and an application with educators. American Journal of Mental Deficiency, 72(1): 100-107, 1967.

To study the structure of attitudes toward MR and the EMR, a 70-item Likert format questionnaire was constructed on the basis of a

7-area conceptualization of the domain. Embedded among these items were measures of authoritarianism and factual knowledge about retardation. The questionnaire was administered to 235 respondents, primarily individuals in special and general education but with some in other occupations. Eight to 4 principal component factors were rotated orthogonally using the normal varimax method. The 6-factor solution was selected as the most psychologically meaningful solution. The 6 factors, Segregation via Institutionalization, Cultural Deprivation, Noncondemnatory Etiology, Personal Exclusion, Authoritarianism, and Hopelessness, were identified and described. Meaningfulness of the dimensions was attested to by the fact that 5 of the 6 scored factors differentiated significantly between Ss in the field of retardation and those in general education. Scored factors were independent of age, sex, marital status, and educational level for this combined sample. As hypothesized, Ss in the field of retardation possessed more factual information ($p < .001$) than other respondents. (10 refs.) - (Source: AJMD)

1076 Field Avenue
Plainfield, New Jersey 07060

443 Fine, Marvin J. Attitudes of regular and special class teachers toward the educable mentally retarded child. Exceptional Children, 27(1):429-430, 1967.

Differences in attitudes and expectations regarding the EMR were studied in 13 special and 21 regular elementary teachers in Lansing, Michigan, public schools. Data included rating good citizenship, social adjustment, reading achievement, personal adjustment, and academic performance in order of classroom importance and ranking, on a 5-point scale from strongly agree to strongly disagree, their reaction to the statement "most children of lower ability would do better if made to try harder." Data were analyzed by Lawsche and Baker Nomograph and Fisher's Exact Probability Test. Results indicate: (1) special class teachers place greater emphasis on personal and social adjustment than do regular teachers; and (2) special teachers appear to be less demanding than regular teachers for the low ability child to "try harder." Conclusions indicate that special classes may be understimulating the MR child in academic performance. (5 refs.) - M. E. McKee.

School of Education
University of Kansas
Lawrence, Kansas

444 Training and certification requirements for teachers of the mentally retarded. Mental Retardation (Canadian ARC), 17(1):15-17, 1967.

Training (graduate and undergraduate) and certification requirements for teachers of the MR are presented for the Canadian provinces of Manitoba and Alberta. A teacher in Manitoba must hold a teaching certificate for the grade or grades taught. Teachers of "trainable" children must have a basic teacher's certificate. For Alberta the offerings of the University of Calgary are listed as well as several non-credit evening courses. (No refs.) - J. Melton.

No address

445 Kukoda, Louis J. The role of the teacher in the rehabilitation of the atypical child. Forum, 4(1):39-41, 1967.

The most important aspect in habilitation of the atypical child is job placement. Special education teachers can contribute more effectively to this end result by: (1) possessing a more positive view of the retardate's future; (2) continuing to develop in the retardate the communication and measurement tools he will need; (3) extending his attention span; (4) developing a positive concept of himself and his role as a productive worker; (5) cultivating his acceptance and observance of rules (personal habits, courtesy, safety, time schedules, and minimum work standards); and (6) training him in the proper use of common tools. What the special education teacher does and is able to accomplish to a great extent determines what those in sheltered workshops and rehabilitative agencies are able to do. (No refs.) - A. Huffer.

No address

446 Leichman, Diane S. The interdisciplinary-role of the educator. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 2 p. Mimeographed

In order to make a significant contribution to the development of handicapped children the teacher should actively participate with other professional workers in diagnosis, goal setting, and continuing evaluation procedures. An interdisciplinary team should periodically assess each child's program and plan for future development. Collaboration with the significant people in the life of a

handicapped child should help the teacher to better understand the needs and capabilities of the child and the role she should take in the child's development. (No refs.) - J. K. Wyatt.

Special Education Branch
Los Angeles City School District
P. O. Box 3307
Los Angeles, California 90054

447 Flanders, B. H. Teachers in isolation. Special Education, 55(4):4-6, 1966.

England's problem of isolating teachers in training centers for severely subnormal persons is described. The transfer of these training centers from the Ministry of Health to the Department of Education and Science is discussed in terms of advantages and objections. At present, there are too many untrained teachers in training centers in England but this is changing rapidly and the staff in these centers should soon be qualified by virtue of training courses or years of experience. New 2-year training courses are being established in colleges for those teachers who work in training centers. Status and salary structure are considered inferior when compared with teacher positions. Lack of education support and a feeling of isolation from the main educational system are major handicaps. Placement of the training centers within the Department of Education and Science should improve the status of this branch of special education. (2 refs.) - B. Bradley.

Leeds College of Commerce
Leeds, England

448 Corcoran, Eileen L. The exceptional child educates the future teacher. Digest of the Mentally Retarded, 3(3):178-179, 1967.

Forty college students who were majoring in health and physical education took part in a volunteer program designed to acquaint them with the physical education needs of SMR and TMR children (ages 7 to 17). The students were assigned to the children on a 1-to-1 basis with emphasis on assessing the individual needs of each child. Activities included swimming, bowling, and educational rhythms. The program was based on the hypothesis that direct contact with MR children helps the students to direct the teaching effort toward what the child can do rather than being concerned about what he cannot do. (No refs.) - J. K. Wyatt.

Board of Cooperative Educational Services
Second Supervisory District
Monroe County, New York

VOCATIONAL HABILITATION-REHABILITATION

449 Strickland, Conwell G., & Arrell, Vernon M. Employment of the mentally retarded. Exceptional Children, 34(1):21-24, 1967.

The case files of employable EMRs (977 males; 428 females) were studied to determine the extent to which they had found initial employment in jobs for which they had been trained in the school-work program. This program is a cooperative venture between the Special Education and Vocational Rehabilitation divisions of the Texas Education Agency. It was found that: (1) 80 percent of the Ss held jobs for which they had been trained; (2) less than one-half of 1 percent held jobs in the same occupational category for which they had been trained; (3) approximately 10 percent were employed in an occupational field unrelated to the field for which they had been trained; and (4) 10 percent were not trained but received guidance and job placement services. The difference between the sexes was minimal. Occupational categories in which the youth were employed included: farming, automotive services, construction, and service trades. (2 refs.) - A. Clevenger.

Baylor University
Waco, Texas

450 Keate, John J., & Hall, Vaughn L. A coordinated program of vocational rehabilitation and special education services for the mentally retarded. Final Project Report. Salt Lake City, Utah, 1966, 15 p. Project No. RD 1749-D-66-01. Mimeographed.

An initial 3-year coordinated program of educational and rehabilitation services for the MR in job placement and community living has proved to be successful in terms of parental

involvement and counseling, community awareness and participation, and client habilitation. The program was explained to each parent by the vocational rehabilitation counselor. Meetings were scheduled with the State Industrial Commission to review rules and regulations relating to job training of the MR population. Recognition of the importance of vocational rehabilitation in the curriculum has increased and early vocational orientation within the special educational program is now being accepted. A survey of referrals for this 3-year period has shown that 4 school districts referred 227 special education students with 166 accepted for services, 24 not selected, and 76 in referral status at the end of the period. Of the 166 clients accepted for service, 52 were considered successfully rehabilitated and 14 were termed unsuccessful. Lack of workshop facilities tended to limit success with the more handicapped clients. A list of occupational placements with wages (range $.50/hr to $2.60/hr) is included. The present staff includes 4 counselors, 2 secretaries, the job placement specialist, and essential consultants. (No refs.) - B. Bradley.

136 East South Temple
Salt Lake City, Utah 84111

451 New York State Interdepartmental Health and Hospital Council. Proceedings of the Institute on the Employment of the Mentally Retarded in New York State Civil Service. Fenton, Joseph, ed. Albany, New York, New York State Interdepartmental Health and Hospital Council, 1966, 56 p.

The proceedings of the Institute are directed toward the development of procedures resulting in increased opportunities for the MR in the New York State Civil Service System. This project is interdepartmental involving participants from major state agencies and departments. The Executive Order establishing state programs to provide job opportunities for the MR in New York State Civil Service focuses on: (1) job descriptions of labor class positions appropriate for the employment of the MR (non-competitive class positions), (2) determination of specific responsibility involving the Division of Vocational Rehabilitation which will serve as a certifying agency for the employment of MR in non-competitive and labor category Civil Service positions, (3) provision for appropriate referral sources and job related problems, and (4) coordination of vocational training and job placement. Panel presentations emphasize the differences among the MR and the need to obtain increased knowledge about this population with reduction of stereotyped biases. The Institute program included a message from the Governor, his executive order, keynote address, films, panel discussions, and concluding remarks. Appendices present charts of available positions and participants. (12-item bibliog.) - B. Bradley.

84 Holland Avenue
Albany, New York 12208

452 Williams, Norwood L. The establishment of a vocational rehabilitation facility in a state institution for the mentally retarded: Guests or partners. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 13 p. Mimeographed.

Since its founding in 1965, the Vocational Rehabilitation Facility at Rosewood State Hospital (Owings Mills, Maryland) has accepted 483 referrals and has successfully rehabilitated 150 MR patients. Referrals to the program are made by the hospital and by community agencies. The program plan includes: (1) a pre-vocational evaluation period--2 months; (2) a vocational training and day placement period--6 months; (3) a community placement period--6 months; and (4) a permanent placement and follow-up period--4 months. Instruction and experience are provided in 10 training areas: dietary, domestic arts, sewing, nurse's aide, janitorial-maintenance, landscaping-grounds, general shop, shoe repair, upholstery, and hospital industries. Clients attend adult education classes which emphasize the important aspects of independent living. Opportunities for speech therapy and psychiatric consultation are available. Institutionalized clients accepted by the program move into a quarter-way house. Funds have just been made available for the establishment of 2 half-way houses. Rehabilitation programs for institutionalized MR clients need to be a part of the total hospital program. (No refs.) - J. K. Wyatt.

Rosewood State Hospital
Owings Mills, Maryland

453 Price, Idris. Notes on the training of mentally handicapped adults. Teaching and Training, 5(2):54-55, 1967.

Training programs for MR adults can be enhanced by thoughtful planning and programing. Suggested guidelines include: (1) be

realistic in ideas and methods; (2) plan individual programs for each trainee based on abilities; (3) establish a prolonged period of training exercises to develop the full potential of trainee; (4) try new methods, evaluate scientifically, and accept and abandon methods according to merit; and (5) base the training unit on the goal of making each trainee feel he is useful and wanted by society. (No refs.) - M. E. McKee.

Industrial Training Unit
Oxford, England

454 Ferguson, Robert G. Vocational training program in a residential treatment center. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 13 p. Typed.

Work training experiences of a practical nature are one of the unique features of the vocational training program (VTP) designed for students age 6 years through adulthood at the Devereux school campus. The students are programmed into 4 separate divisions. Each division meets the needs of a different group. The program includes areas related to vocational training as well as additional educational, social, recreational and home activities with remedial and supportive services. The program is sensitive to the student's changing needs and has many experienced staff members available for providing a constant feedback. These features encourage a student's motivation and a willingness to try in spite of his previous failures. For selected students, vocational training gets major emphasis. A large number of jobs have been developed in successive steps for providing incentive and success to the students. Other incentives include high school credits for certain work activities, apprentice pay, and development of ability to obtain an off-campus work position. The effects of VTP are reported on a sample of 69 students. Vocational and academic high school credits were being obtained by 50 percent of the sample. Regular vocational pay was being earned by 70 percent, and a combination of high school credits and regular vocational pay was being earned by 23 percent. In regard to future programming for the sample, 17 percent were considered for further institutional adjustment, 44 percent as potential for sheltered employment, and 39 percent as potential for outside independent employment. (3 refs.) - C. M. N. Mehrotra.

Devereux Schools in California
P. O. Box 1079
Santa Barbara, California

455 Rae, W. J. W. A training centre in Aberdeen. Special Education, 55(4):7, 1966.

A new senior occupation center to be opened December 1967 in Aberdeen, Scotland will focus primarily on training. A 3-tier system includes: programs for open employment, social and job training for employment within the center, and training for the most severely handicapped persons who qualify for admission. Thirty men and 30 women will be selected from unemployed persons enrolled in special schools and junior occupation centers. Lunches and transportation will be provided on a token system so that trainees will learn to travel on city transportation. A small weekly wage is to be included for incentive. Social training will be directed toward aiding the trainee to merge with the community. Initially, training will include: cooking, laundry, housework, sewing, and allied crafts for women, and woodworking, plant growing, and gardening for men. Other activities such as pottery and painting are planned for less adequate persons. (No refs.) - B. Bradley.

No address

456 Marpet, Louis. A light factory shop for young adult retardates at an occupational training center. Digest of the Mentally Retarded, 3(3):155-157, 1967.

A light factory shop located in an occupational training center is used to teach work skills to EMR boys (ages 17 to 21). The center emphasizes flexibility of curriculum, the establishment of good work habits and training in the wise use of leisure time. Emphasis is placed on discovering the socio-occupational potential of each boy. The light factory-sorting shop simulates an actual work situation. The work experiences include sorting, assembling, disassembling, color and shape identification, training in finger dexterity, filing, training in the use of the telephone directory, an electronics type job, and IBM work. (No refs.) - J. K. Wyatt.

Manhattan Occupational
Training Center
New York, New York

457 L'avenir des adultes infirmes est dans les "Centres d'aide par le travail." (The future of the retarded adults is in the

"sheltered work centers.") Nos Enfants Inadaptes, quarterly review (special issue):13-15, 1967.

Sheltered work centers are intended to help MR adults to improve their aptitudes and self-image. The Bel-Air workshop, housing 30 workers, began 3 years ago at St. Etienne. The local industries buy many of the commodities made at the centers such as coat and dress hangers, and plastic rolls. The MR adults both manufacture and prepare the products for shipping. By breaking down the work into small steps, one finds work which is simple or complex enough for each adult. The Monta workshop is in contact with the local industries also and has work of graduated difficulty such as materials made by hand, with a screw-press, or with electric or pneumatic machines. Some jobs are rotated in order to give more motivation to some. Examples of the work include: manufacturing of paint rollers, packing camping sacks, and assembling electrical equipment such as circuit breakers. These 2 centers have been invaluable in building self-esteem of the worker and helping him see himself as a useful and responsible adult. (No refs.)-D. Bammel.

No address

458 Converse, Harold. A joint undertaking: A hospital and community workshop working together. Project News of the Parsons State Hospital and Training Center, 3(2):18-22, 1967.

A sheltered workshop for training and demonstration purposes was established at the Parsons State Hospital to supplement the nearby community workshop. Its major orientation, in addition to the rehabilitation of the patient, was experimental while the community workshop orientation was profit. The objectives of the program were: (1) to demonstrate a method of operation which permits mild and moderate MRs to complete required contracts; (2) to train patients for community placement; (3) to refine work-capacity assessment and personal assessment; (4) to train professional personnel; (5) to aid in therapy; and (6) to determine the equipment needed for tasks. Now contract work is evaluated in terms of profitability and levels of adaptive behavior required. Both shops were concerned with the training and evaluation of patients; the hospital shop was concerned with the patients' social and personal adjustment, and with assessment of vocational competency (work-study evaluation and on-ground placement evaluation), work capacity (individual's ability to respond to a variety of work situations), and competency assessment (communicative skills, personal hygiene, leisure time, safety, economic efficiency, civic responsibility, social adjustment, and vocational development). The community shop was concerned with job training, and a psychological and work evaluation. Therapy aid was given at the hospital shop in the form of individual counseling and by given tasks and duties designed to raise the patient's self-esteem. Local communities with sheltered workshops were encouraged to send personnel to the hospital for preparation and training as managers, directors, or supervisors. (No refs.) - R. Grieger.

Parsons State Hospital and
Training Center
Parsons, Kansas

459 Cahuzac, M., & Blanc, J. L'expérience toulousaine de mise au travail des infirmes moteurs cérébraux. (The Toulouse experiment in finding work for cerebral motor patients.) Revue d'Hygiene et de Médecine Sociale, 15(3):207-220, 1967.

A 9-question occupational survey on job finding success of the motor handicapped from 1950-1964 revealed an increase in success according to intelligence. Difficulty was encountered in classifying those under IQ 60. Of the 127 responses received from 250 Ss over 17 years of age, 48 percent had a trade or were pursuing studies while 52 percent had no work and were considered failures. Only those able to get to a place of work could readily find a job. Paraplegics and quadriplegics have less chance than hemiplegics; and athetotics less than spastics. Functional readaptation centers such as the Motor Education Institute, the Lycée, and the Medical-Professional Center will increase the number of cerebral-motor patients who will be able to find jobs. (No refs.) - W. Asher

No address

460 Randall, Florence. Getting A Job. Palo Alto, California, Fearon Publishers, 1966, 90 p. $2.50.

Basic information needed by the young person considering employment is presented in easily read style with many photographs, illustrations, and outlines. Fifty-two part-time jobs are listed and training programs are mentioned. Particular jobs are listed and described within these categories: (1) agricultural, (2) building service, (3) clerical,

(4) cloth and clothing manufacturing, (5) construction, (6) fishing, (7) food products, (8) food service, (9) forestry, (10) glass and clay products, (11) guest service, (12) home service, (13) leather, (14) lumber and wood, (15) paper and paper products, (16) personal service, (17) printing and publishing, (18) public service, (19) recreation, (20) service station and garage, (21) store, and (22) transportation industry. The mechanics of finding and applying for jobs are discussed. (No refs.) - J. Snodgrass.

CONTENTS: Everybody Works; Jobs You Could Get; Getting Ready to Work; Finding a Job; Getting a Job Interview; Application Forms; At the Job Interview; On the Job.

461 Wheeler, Doyle. The promise and future of pre-vocational evaluation of the mentally retarded. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 5 p. Typed.

In order to provide for the vocational rehabilitation needs of MRs, academic and rehabilitation programs should be included in 1 comprehensive program aimed at providing personal, social, and emotional adjustment and appropriate job training and placement. The pre-vocational evaluation of MR children should be of primary consideration in planning for their total development. Emphasis should be placed on teaching the MR whatever they need to know to function effectively in our society. Individual needs should be assessed. The elementary education of potentially employable MRs should include social, behavioral, and pre-vocational training. Work-related experience should be an integral part of the educational program. Future pre-vocational evaluation of the MR should move away from the limited job opportunities afforded by routine and repetitive work roles. (No refs.) - J. K. Wyatt.

Vocational Rehabilitation Division
Texas Education Agency
Austin, Texas 78711

462 University of South Dakota, Psychology Department. The Predictive Assessment of the Adult Retarded for Social and Vocational Adjustment. A Review of Research. Part I, Annotated Bibliography. Vermillion, South Dakota, 1966, 1966, 160 p. Mimeographed.

An annotated bibliography constitutes Part I of a series of material on the problem of predictive assessment of the adult retarded for vocational and social adjustment. The sections include: (1) 73 general items, (2) 69 descriptive studies before 1945, (3) 96 descriptive studies after 1945, (4) 108 items on the measurement of personal variables, (5) 59 items on environmental variables, (6) 53 predictive studies, (7) 39 items of trends in training, and (8) 94 items on miscellaneous program summaries and reports. An author index is provided. (591-item bibliog.) - J. Snodgrass.

463 Wolfensberger, Wolf. Vocational preparation and occupation. In: Baumeister, Alfred A., ed. Mental Retardation: Appraisal, Education, and Rehabilitation. Chicago, Illinois, Aldine Publishing, 1967, Chapter 10, p. 232-273.

Developmental, educational, and vocational programs for MRs should reflect the cultural values of society and provide training which will enable MRs to lead productive work lives. The social complexity of our society has led to the identification of more MRs and the need is emerging for habilitation procedures which involve long-range guidance and planning. Present training practices in the United States do not reflect empirical findings. Vocational training programs should emphasize training in settings which simulate those to be encountered in industry. Emphasis should be relevant, but concentration on 1 specific area or workshop overspecialization should be avoided. Work assignments should be rotated; the length of training periods should be adjusted to meet individual needs; and counseling aimed at facilitating adjustment should be available. Recreational activities should be limited to after working hours and should be used as aids to improve socialization and self-concept. The most common types of workshops are habilitational, terminal, and occupational. Eligibility for workshop admission should be determined by ability to render service rather than by specific MA, IQ, or handicap criteria. Procedures which may be used to improve placement success include: apprenticeship, on-the-job training, and the use of meticulous care and supervision in introducing a trainee to a new job. The quality of research in the field of vocational training is low. Better research aimed at assessing the value of motivational incentives and identifying valid outcome predictors is needed. (198 refs.) - J. K. Wyatt

Nebraska Psychiatric Institute
Lincoln, Nebraska

464 Vocational Rehabilitation Administration. Standards for Rehabilitation Facilities and Sheltered Workshops. Washington, D. C., Superintendent of Documents, U. S. Government Printing Office, 1967, 19 p.

Standards and criteria are outlined for sheltered workshops as they pertain to the organization and administration, services, staff, clients, records and reports, community relations, and safety. Definitions indigenous to this installation are given for the terms: job family; job tryouts; rehabilitation facility; training in occupational skills; training services; workshop; work evaluation; and work testing. Salient features of criteria include: a broad representative community membership who serves without pay; services for intake, work evaluation, training, and placement; a staff consisting of an administrator, plant manager, foreman, psychologist, physician, occupational and physical therapists; confidential files maintained for authorized personnel scrutiny; records of attendance, performance, and progress of clients; liaison between the workshop and community resources which provide further services for the client; and physical plant and equipment which meet legal requirements for sefety. Workshops are visited by vocational rehabilitation staff who develop the standards and criteria to insure their maintenance. All applicants must meet the requirements. (8-item bibliog.) - G. Trakas

Contents: Preface; Foreword; Definitions: I. Organization and Administration, II. Services, III. Staff, IV. Client, V. Records and Reports, VI. Community Relations, VII. Safety; Bibliography.

465 Jeffrey, Dorothy A. Administration in rehabilitation. Rehabilitation Literature, 28(8):248-250, 269, 1967.

Because of the growth in rehabilitation, the management of rehabilitation organizations has become a complicated problem that needs administrative analysis. Rehabilitation agencies are goal-oriented; they have functional, technical, profit-making, personal, and public purposes; they represent rational-legal types of bureaucracies. The effectiveness and efficiency of a rehabilitation organization may be analyzed in terms of what can be done to increase services. Knowledgeable rehabilitation administration involves the melding together of the various social systems that interact with the agency. (11 refs.) - J. K. Wyatt.

No address

466 Dolberg, Marc, & Lenard, Henry M. The concepts of disability and handicap revisited. Cerebral Palsy Journal, 28(2):3-6, 9, 1967.

Examples and distinctions are drawn between the terms disability and handicap. An upgrading of terminology is important if one is to keep pace with rapid developments in vocational rehabilitation (VR). Clarification is needed for workers in the field to determine who shall be eligible for VR participation as well as to improve communication with the public. As VR services expand, more categories of disability will emerge (physical, mental, social, educational, emotional). A disability does not necessarily become a handicap unless it curtails one's physical and/or mental potential. But there is a cause and effect interaction between the 2 terms. Disability is the lack of assets which limits the individual's activity and functioning; handicap is the cumulative result of the disability. (7 refs.) - G. Trakas.

Cerebral Palsy of Greater
Milwaukee Work Center
Milwaukee, Wisconsin

467 Fendell, Norman. Foster grandparents join the rehabilitation team. Journal of Rehabilitation, 33(3):22-23, 1967.

A special sheltered workshop program in Manchester, Connecticut is helping both young retardates and some of the 8½ million senior citizens who earn less than $3,000 per year per family. The senior citizens provide a 1-to-1 relationship for the clients in specific work instruction, use of leisure time, traveling by bus, making change, or using the phone. The foster grandparents procure additional income, develop the feeling of being needed again, and have a chance to use their abilities in the adult business world. (No refs.) - J. Snodgrass.

Manchester Sheltered Workshop
Manchester, Connecticut

RECREATION

468 Sengstock, Wayne L., & Stein, Julian U. Recreation for the mentally retarded: A summary of major activities. Exceptional Children, 33(7):491-497, 1967.

The importance of recreation activity for the MR during his formative years is more talked

about than practiced. Communities do not know or are not availing themselves of the services offered by organizations who have allotted recreation in their programs. The development of social competencies, physical fitness, emotional stability, and vocational potential are affected by recreational activity. Organizations concerned with the problem and their major activities include: National Association for Retarded Children (development of recreation programing), The American Association for Health, Physical Education and Recreation (research projects), Joseph P. Kennedy, Jr. Foundation (publicity information and support of summer camps), National Recreation and Park Association (consultation services), American Association on Mental Deficiency (assistance to schools and community agencies in implementing programs), Boy Scouts of America (adaptation of the program to include MRs), Information Center—Recreation for the Handicapped (provision of relevant information). Names and addresses are included for further information. (4 refs.) - G. Trakas.

National Association for
Retarded Children
New York, New York

469 Council for Exceptional Children, & American Association for Health, Physical Education, and Recreation. Recreation and Physical Activity for the Mentally Retarded. Washington, D. C., 1966, 87 p. $2.00.

This manual presents suggestions and techniques for providing recreational and physical activities for the MR. Its purposes are to provide those involved with the MR with information to orient them to the problems they will face and to give them sufficient confidence to expand their programs to include more recreational and physical activities for the MR to enable them to live more healthful and satisfying lives. The basic objective of the activities is to develop in the MR greater degrees of social independence, physical well-being, emotional stability, and intellectual advancement. Topics discussed include: characteristics of the MR; program implementation; special needs of the MR; techniques of game leadership; suitability of activities; rhythmic activities and dance; basic movement; physical fitness activities; games and sports; dramatics; excursions; social activities; organized groups; hobbies and collections; and community services. The manual is addressed to the physical educator who may be naive about MR, the special education teacher who has little technical knowledge about teaching recreational and physical activities, and the parent or volunteer who may lack background and training in both areas. (82-item annotated bibliog.; 25-item bibliog.) - M. E. McKee.

CONTENTS: What Is Recreation?; Who Are the Mentally Retarded?; What Play Can Mean for the Mentally Retarded; Objectives and Desired Outcomes; Principles of Organization; Teaching the Mentally Retarded How to Play; Suggested Activities.

470 Hayden, Frank J. Physical Fitness for the Mentally Retarded. Toronto, Ontario, Canada, Metropolitan Toronto Association for Retarded Children, 1964, 48 p. Copies available from the Joseph P. Kennedy Jr. Foundation, 719 Thirteenth Street, N.W., Suite 510, Washington, D.C. 20005

Guidelines for selecting physical activities (PA) and planning programs for MRs are offered to teachers and parents. Aims of PA are physical fitness, motor abilities, and body mechanics. Individual needs are met by testing, assessing, prescribing, and evaluating muscular and organic fitness. Testing the muscles includes exercises for the arms and shoulders, back, abdomen, and legs. Organic fitness is determined by free and stunt running, follow the leader, obstacle courses and mazes, interval involvement, relays, and running games. Physique is measured by weight and height. Criteria for classifying activities depend upon the resistance, repetitions, rate, and range of physical fitness and the involvement, intensity, and interval of organic fitness. Swimming is offered as an exercise that combines physical and organic fitness. (24-item bibliog.; 6 refs.) - G. Trakas.

471 Breaugh, John M. Combining mentally retarded and physically handicapped children in an extended school-year program. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 15 p. Mimeographed.

Evaluations of the Lansing, Michigan summer recreation program for MR, orthopedically handicapped, deaf, hard-of-hearing, blind, partially sighted, and emotionally disturbed children led to decisions to: (1) continue combining children with various handicaps in 1 program, allowing for grouping according to interests and abilities; (2) provide a variety of short classes aimed at specific interests; and (3) seek physical facilities which contain a nature center and an indoor

swimming pool. This combined 4-year program includes nature study, music, recreation and physical education, enrichment experiences, and training in communication skills. Program evaluation studies were conducted in 1964 and 1966 in order to assess the feasibility of combining MR and physically handicapped children in this extended school-year program. Program evaluations for 1966 were obtained from staff personnel, teacher trainees, parents of children presently enrolled in the program, and parents of orthopedically handicapped children who had been enrolled in previous years but had not applied for admission in 1966. The evaluation also included the development of a progress film on the children in the program and a consideration of case studies and progress reports on each child. (No refs.) - J. K. Wyatt.

3020 Lake Lansing Road
Lansing, Michigan 48912

472 Kunz, Joe W. An institutional approach to camping for the mentally retarded. Recreation in Treatment Centers, 5(September):30-32, 1966.

Beginning in 1966, Muscatatuck State Hospital and Training Center will operate a resident camping program for MR children in Indiana. The program will emphasize the total treatment of the MR child and the development of individual self-esteem and potential. During the first year of operation the staff will assess program and facility needs, and will evaluate operational policies and procedures. Key personnel will be regular full-time staff from the institution and will include specialists in recreation, special education, occupational therapy, music, and activity therapy. The eventual goal of the camp is to offer a combined residential and day camping program, and a family camp. These programs will provide practical life experiences, outdoor education opportunities, family programs, and educational seminars for parents. (No refs.) - J. K. Wyatt.

Muscatatuck State Hospital
and Training Center
Butlerville, Indiana

473 Pour leurs vacances: La "colonie" est possible, la "garderie aérée" aussi. (For their vacation: Camp and outside care centers are possible.) Nos Enfants Inadaptes, quarterly review (special issue):10-11, 1967.

Retarded, as well as normal children, need vacations. Through activities at camp and outside care centers, the MRs can learn to think of themselves as less abnormal. Camp is characterized by regularity in meals, rest, clean-up, and activities. The teacher-counselor is the stabilizing force for the child by caring for him, understanding him, and in general, acting as a mother. Through her, the child discovers the joys of nature, stories, and friendship. He learns the discipline of a clean tablecloth, private property, and the sleep of his friends. As a result of this experience the child usually has more openness, personal initiative, and self-reliance. Insufficient personnel are responsible for the failure of the program as envisaged. An outside care center is another project when less funds are available. Every afternoon for a month the children are taken to the country or a park. The only requirements are a shelter in case of storm and rest rooms. Items needed are playground equipment, pencils, a sense of humor, and an imagination. The personnel are the regular workers and the children's mothers, brothers, and sisters. The goal for these projects is for the children to learn to think of themselves more as normal. (No refs.) - D. Bammel.

474 Hetzer, Hildegard. Das Spiel geistig behinderter Kinder. (The play of mentally retarded children.) Lebenshilfe, 6(1): 1-8, 1967.

The highlights of a workshop dealing with the play of mentally retarded children (held at the International Council for Children's Play and Playthings in Paris during July, 1966) are discussed. MR children's play takes many forms depending on their stage of development and the cause of mental retardation and differs from that of normal children because of inferior intellectual capabilities. MR children observed during the first year of life play very little and are usually very passive or hyperactive. During the second and third years of life, the play is simple and lacking in spontaneity--usually just fondling or pulling toys. Passive children often have to be enticed into play, while the hyperactive should be given only a few playthings at a time. The skills learned in play are carried over to other activities in life, but they need more time to learn skills than normal children, more intensive instruction and supervision in play, and more freedom in play as they profit most from play activities they can do by themselves. (No refs.) - E. Okel.

Giessen
Hochschule für Erziehung
Licher Strasse 74
Germany

475 Freeberg, William. Recreational camping for the retarded. Recreation in Treatment Centers, 5(September):8-11, 1966.

A well-planned and well-conducted resident camping program should assist MRs by providing learning experiences which will help: (1) family life adjustment; (2) adaptation to community life and services; (3) physical and social development; and (4) the development of leisure-time skills and hobbies. An interdisciplinary team composed of professionals who have responsibility for MRs should determine the aims and objectives of a program and should make decisions concerning: selection and grouping of campers; leadership training; program selection; interpretive programs; and evaluation. Both EMRs and TMRs can profit from a resident camping experience. (No refs.) - J. K. Wyatt.

Department of Outdoor Education
and Recreation
Southern Illinois University
Carbondale, Illinois

476 Mondschein, Diane. They can: Camping. Academic Therapy Quarterly, 2(2):100-103, 126, 1967.

Socialization may be taught to educationally handicapped children by means of a day camp which emphasizes success, fun, and normality. A day camp was established in California which followed this philosophy. The programing includes: (1) a group process for socialization, (2) an opportunity for participation, (3) a structure, with opportunity for self-expression, (4) motivation and stimulation, (5) external control leading to internal control, and (6) consistency with flexibility. Implementation is through the use of athletics, hobbies, the arts, nature study and lore, field trips, and special events. Results indicate the development of better self-control, self-concept, physical skills, peer relationships, and increased independence, self-reliance, and self-motivation. Functional groups of five or six, utilizing special methods and techniques, allow for maximum supervision and development appropriate to the age level and abilities of each child. Staff qualifications include: (1) desire to work with and help children; (2) warmth, enthusiasm and flexibility; (3) physical stamina; (4) camp and group work experience; and (5) professional background and experience. (No refs.) - M. E. McKee.

Camp Harmony
Calabasas, California

477 Ciaglia, Donald J., & Goodbody, Jack P. A place for multi-disciplines and multi-handicaps to share life. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 7 p. Mimeographed.

A residential camp which uses an integrated approach has successfully combined children with a variety of physical handicaps into 1 program. Children are grouped according to their ability to participate in group living rather than by medical diagnosis or IQ level. The program needs of MR children cannot be standardized because of the wide variety of their needs and the wide range they represent in terms of capability and disability. The important factors to be considered in planning physical activities for the MR are preparation and program modification. The camp staff which consists of a physician, physical therapist, nurse, speech therapist, educator, recreator, and students from applied health areas plan programs for each individual and decide on group composition. The camp offers speech and physical therapy programs, as well as traditional camp activities. (No refs.) - J. K. Wyatt.

Day Care Training Center for
Handicapped Children of Monroe
County, Inc.
Rochester, New York

478 National Society for Crippled Children and Adults. Directory of Camps for the Handicapped. Sixth edition. Chicago, Illinois, 1967, 76 p. $1.00

Resident and day camps which identify themselves as serving physically, mentally, socially and/or emotionally handicapped children and adults or which report program adaptations to accommodate such disabilities are listed in this directory. Compiled by the National Society for Crippled Children and Adults in cooperation with the American Camping Association, the directory lists each camp in terms of impairment served, name of camp, location, age range, number and length of sessions, capacity, fee, sponsor, and whether it is accredited by the American Camping Association. Camps are classified in the index according to the handicap served with 57 resident camps and 37 day camps specifically indicating they serve the MR. (No refs.) - A. Clevenger.

Contents: Foreward; American Camping Association Accreditation; Resident Camps; Day Camps.

INSTITUTIONAL PROGRAMS AND SERVICES

PHILOSOPHY, ADMINISTRATION, AND SUPERVISION

479 Blatt, Burton, & Kaplan, Fred. Christmas in Purgatory: A Photographic Essay on Mental Retardation. Boston, Massachusetts, Allyn and Bacon, 1966, 121 p. $5.50

Hope for the improvement of institutions for the MR is presented by a pictorial comparison between conditions existing in many institutions and the heartening conditions which exist at 1 institution (The Seaside, Connecticut). Overcrowding, isolation, physical restraint, ugliness of physical surroundings, and no education are contrasted with freedom, appeal of physical surroundings, attractiveness of the people, and special education. This represents a challenge for each institution to examine its program, standards, admission policies, personnel, budget, philosophy, and objectives. The purpose of the essay is to promote public awareness and to inspire constructive action among those in responsible positions. (No refs.) - C. A. Pepper.

480 Hartman, Katharine B. Over two hundred institutions get HIP. SK&F Psychiatric Reporter, (31):10-11, 1967.

The Hospital Improvement Project (HIP) of the Technical Programs Assistance Branch of the National Institute of Mental Health offers state institutions for the MR and mentally ill an opportunity to try better methods of doing something leading to changes that will improve the care of all patients in the hospital. Projects may cost up to $100,000 per year with allocations of: $6 million to 79 institutions in 1964; $12 million to 156 in 1965; and $18 million to 218 in 1966. Projects are required to be related to the hospital's own needs and about 80 percent is used for staffing programs aimed at improving treatment and reeducation for long-term, severely ill patients, special problem units, day-night programs, half-way houses, preadmission, or aftercare programs. (No refs.) - J. Snodgrass.

No address

481 A rehabilitation home for mentally retarded children. Forward Trends, 2(2):56-61, 1967.

The program of a rehabilitation home for "deeply" MR children in Cracow, Poland is based on the philosophy that all children can be educated. The home accommodates 100 girls from 3 to 18 years of age. Educational rehabilitation procedures stress the idea of building on existing abilities in order to increase them or create new ones. Children are grouped according to level of physical disability and degree of retardation. Program planning centers around the special needs of each group. The program emphasizes emotional contact; development and facilitation of communication; psychophysical evaluation; progressive psychophysical training; pre-vocational training; and development of social behavior and self-help skills. (No refs.) - J. K. Wyatt.

482 Woodard, John S. Neuropathology in the state hospitals of South California. International Journal of Neuropsychiatry, 3(2):142-148, 1967.

Data are presented from 1,000 consecutive autopsies, 700 from a state psychiatric hospital, and 300 from 2 hospitals for the MR. The cases at the hospitals for MR were generally young individuals with severe mental and neurological disability and represented only 8 percent of the patient population. The diagnoses of the MR cases were negative brain pathology (56), primary growth disturbance (55), anoxic brain damage (50), mongolism (34), neoplasm (3), infectious brain disease (31), primary cerebello-olivary degeneration (17), residual of kernicterus (9), unclassified morphologic brain disease (16), neuron storage disease (11), diffuse sclerosis (6), residual traumatic encephalopathy (2), cerebrovascular disease (2), cerebro-oculo renal syndrome (2), cretinism (2), phenylketonuria (2), and Alper's disease (2). The 244 cases with significant brain pathology were an average age of 4.0 years. The autopsy cases at the state psychiatric hospital were generally the more permanently institutionalized and were representative of about 40 percent of the patient population. Some of the diagnoses included no brain pathology (227), Alzheimer's disease (190), cerebrovascular disease (82), syphilitic meningoencephalitis (42), inclusion body disease (32), Pick's disease (12), alcoholic encephalopathy (27), anoxic brain damage (15), degenerative brain disease (23), primary striatopallidal atrophy (11), and traumatic encephalopathy (9). (3 refs.) - R. Froelich.

Wilshire Metropolitan Medical Center
Los Angeles, California

ADMISSION, ADJUSTMENT, AND DISCHARGE

483 Kugel, Robert B., Trembath, Jack, & Sagar, Stephen. Some characteristics of patients legally committed to a state institution for the mentally retarded. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 22 p. Mimeographed.

The characteristics of 142 patients court-committed to an institution for the MR are presented. In addition, an analysis of the reasons for their commitment indicates the relatively minor nature of the offenses. Underlying most of these commitments were the social problems which caused these people to be separated from society. The current rationale for committing persons to institutions for the MR is discussed and some of the rationale is questioned as it is currently being applied to the MR. For many patients the commitment procedure may mean long-time institutional placement with no recourse to review. The percentage discharged to the community during a 7-year period was only 14 percent. (14 refs.) - Author abstract.

College of Medicine
University of Nebraska
Omaha, Nebraska

484 Rosen, Marvin. The retardate in the community: A post-institutional follow-up study. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 23 p. Mimeographed.

A preliminary analysis of post-institutional adjustment data indicates that 72 MR Ss, who had been prepared for community living via a Monyhull-type rehabilitation program, have been returned to independent living and have successfully remained outside the institution. This type of rehabilitation program emphasizes 6 phases of transitional preparation: a preliminary assessment by means of psychological and practical knowledge tests; adult education aimed at the development of social and economic skills necessary for community living; vocational training and experience; a community work-halfway house program; community placement; and longitudinal follow-up assessment. The program is designed for MRs with an age range of 20 to 55 years and an admission IQ range of 50 to 80 who lack suitable places to live in the event of discharge. Longitudinal assessment of community adjustment employs structured interview and rating procedures to obtain information on vocational, social adjustment, and economic characteristics. The post-institutional adjustment of these 72 Ss has been most successful in areas where they have had previous training such as job adjustment and social relationships and least successful in areas of new experience such as budgeting and financing. The long-term goal of this longitudinal study is to obtain information concerning the various processes involved in the adjustment of previously institutionalized MRs to community living situations in order to evaluate and modify present training and preparation procedures. (30 refs.) - J. K. Wyatt.

Elwyn Institute
Newton Square, Pennsylvania

SERVICES, PROGRAMS, AND FACILITIES

485 Killian, E. W. New approaches to teaching children hitherto crucial crib cases. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 5 p. Mimeographed.

The Denton State School, Denton, Texas has instituted an evaluation and planning program designed to improve diagnostic procedures and to develop institution and community programs which will enhance the development of MR children previously diagnosed as crucial crib cases. Many children who receive an original diagnosis of bedfast, profoundly retarded, and poor prognosis later demonstrate that they possess greater potential. The goal of the first part of the program is to keep the child at home as long as possible in order to avoid the debilitating effects of early institutionalization. Early identification is emphasized and parents are put in contact with appropriate helping community agencies. The institution maintains 2 projects aimed at maximizing the child's level of functioning. Project A is designed to maximize the child's independent functioning abilities. Project B is designed for children who are not considered to be capable of independent functioning and emphasizes stimulation and physical therapy procedures. Before a child is assigned to either project a series of evaluation procedures is carried out. The second phase of this program begins with admission to the institution. At this time an intensive 2- to 4-week long diagnosis is conducted by a multi-disciplinary team in order to arrive at

realistic prognostic expectations. A preliminary program based on this diagnosis is then designed for the child. Intensive assessment and observation are continued for 2 months. The effectiveness of the program is then assessed and indicated modifications are introduced. The child is then assigned to a project. (No refs.) - J. K. Wyatt.

Denton State School
P. O. Box 368
Denton, Texas

486 Lipman, Ronald S. Results of a survey on psychotropic drug usage in institutions for the mentally retarded. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 32 p. Mimeographed.

One hundred nine usable surveys of institutions for the MR found that psychotropic drugs were being used on 51 percent of the patients with thioridazine and chlorpromazine accounting for 58 percent of all drug usage. A total of 173 questionnaires were sent. Twelve were not appropriate institutions and 52 of the appropriate institutions either refused, did not respond, or returned unusable data. Of the 109 usable returns, 100 came from state institutions and 9 from private institutions. In 91 percent of the institutions thioridazine or chlorpromazine were the most used drugs. Chlorpromazine was typically given between 75 and 300 mg/daily but doses up to 2,000 mg/daily were reported. Thioridazine was typically given at the same dose as chlorpromazine. About 25 percent of patients received these drugs for over 4 years. Other drugs used were Stelazine, Sparine, Librium, Valium, and Dexidrine. The larger institutions tended to use drugs more freely and on a more chronic basis. It appears that the psychotropic drugs have overwhelmingly replaced the use of paraldehyde and camisoles for controlling abnormal behavior. Whether the use of psychotropic drugs are warranted is another question. It appears that the phenothiazines control behavior but at the expense of alertness and cognitive efficiency. The long range effects of phenothiazines have not been determined with certainty. (30 refs.) - R. Froelich.

National Institute of Mental Health
Bethesda, Maryland

487 Casal, Lourdes. Sources of tension in children's institutions. Catholic Charities Review, 51(1):11-17, 1967.

Custodial institutions have become a "dumping ground" for unadoptable children and those with emotional problems who are not suited for foster care. This type of client poses problems which many older institutions are incapable of handling. The addition of psychologists, psychiatrists, and social workers to the professional staff has helped to transform many custodial institutions into therapeutic centers. However, tension arises because of orientation differences between the child care professionals, the cottage parents, and other personnel in child-related or administrative positions within the institution. A part of the professional's role is to advise and instruct the cottage parent who is the true parent surrogate. The material situation (group size, cottage upkeep, vacations, sick-leave) of cottage parents must be improved so that psychological tensions do not build to the point of breakdown. A redefining of their role in the major decision making within the institution is also needed. (5 refs.) - T. C. Agin.

Saint Dominic's Home
Blauvelt, New York

488 Butterfield, Earl C. The role of environmental factors in the treatment of institutionalized mental retardates. In: Baumeister, Alfred A., ed. Mental Retardation: Appraisal, Education, and Rehabilitation. Chicago, Illinois, Aldine Publishing, 1967, Chapter 6, p. 120-137.

Empirical research findings, although limited, support the thesis that different environments have different effects on the intellectual functioning and personality development of institutionalized MRs. Verbal and abstract intellectual development is affected adversely by institutional environments. These limitations are most pronounced in young MRs and in MRs from favorable home situations. In order to decrease these deficits, institutions should provide opportunities for verbal expression and use cottage rather than dormitory-type residences. Studies on the personality development of institutionalized MRs indicate that desirable environments are those that provide for warm, intimate, positive contact between adult caretakers and MRs. Institutions should train attendants to interact frequently, realistically, and warmly with patients. The patient-attendant ratio should be small. The empirical evidence on the effects of different environments on the vocational adjustment

of MRs is ambiguous. The relationship between release outcome and institutional programming needs to be examined. Also, assessments of the specific institutional experiences of individual MRs and the specific characteristics of post-institutional settings that tolerate MRs need to be made. (89 refs.) - J. K. Wyatt.

Yale University
New Haven, Connecticut

489 Stephen, Elspeth, & Robertson, Jean. Can institutional care improve? Special Education, 55(4):13-16, 1966.

An on-going experiment in environmental modification for 20 institutionalized severely subnormal children living in a ward at Queen Mary's Hospital in Great Britain is described. The 12 boys and 8 girls range in CA from 4 to 12 years with MAs from below 1 year, 4 months and IQs below 50. Controls from other wards were used but data have not been completed. All children have been hospitalized for at least 3 years and were admitted for social reasons. The 20 children are divided equally into 2 family groups using separate rooms with each group containing a cross section of the 20 children in terms of CA and IQ. Nursing staff includes a sister, charge nurse, staff nurse, student nurses, nursing assistants, and night nurse. Two to 4 nurses are on duty at any one time. At least 2 adults are required to supervise this type of program. Nine children attend a nursery school for 3½ hours daily and 2 additional children attend on a half time basis. Children with MAs below 18 months remain on the ward in play programs but progress has been very slow. Free play is used as a basic technique since it has been successful in other training projects. Initial problems such as sand throwing have been overcome and children have improved in language, imaginative play, and social interactions. A playground and use of volunteer workers are major additions to the program. Preliminary data on rating scales of social behavior indicate considerable progress in functioning level of the experimental group as 7 of the children showed more improvement than controls, 10 showed a similar amount, and 3 indicated less improvement. (9 refs.) - B. Bradley.

Queen Mary's Hospital, Carshalton
Surrey, England

490 Dodson, Doris. Mentally retarded or mentally deprived? Staff, 4(4):11, 1967.

Psychiatric aides can effect positive change in SMRs by using common sense and understanding. A case in point is 1 SMR girl admitted to the institution at 17 years of age as untidy, incontinent, no speech, and unable to feed herself. After 2 years with the aides displaying compassion and understanding whenever time permitted, the S is no longer incontinent, uses language, dresses herself, and helps on the ward. (No refs.) - A. Clevenger.

491 Rogenmuser, Charlotte L. Training the untrainable. SK&F Psychiatric Reporter, (31):18-20, 1967.

A special project was established at the Wrentham (Massachusetts) State School for the Retarded with a U. S. Public Health Service grant to train their most difficult, denudative, aggressive, assaultive, and self-abusive patients through the use of operant conditioning. One staff member for 2 patients and the use of tokens which could be used to buy food were the essential features of the program. Daily routines and staffing problems are discussed. (No refs.) - J. Snodgrass.

No address

492 Patterson, Weldon R. A proposed project to demonstrate the effectiveness of an environmental stimulation service program with severely and profoundly retarded non-ambulatory residents at Clover Bottom Hospital and School. In: American Association on Mental Deficiency, & U. S. Public Health Service, Mental Retardation Branch. Role of Physical Therapy in Mental Retardation. Proceedings of the Workshop for Physical Therapists held at the 90th Annual Convention of the American Association on Mental Deficiency, Chicago, Illinois, May 1966, p. 93-95. Mimeographed.

An environmental stimulation program was developed to provide neuromuscular, sensory, motor, and social stimulation to non-ambulatory, institutionalized severely and profoundly MRs. The programing and facilities in modern building, originally designed to meet the physical and medical needs of the Ss (emphasis on prevention of disease), resulted in marked social and personal regression and increased startle reflexes and contractures in the patients. Recognition of the problem resulted in immediate remediation by replacing

the confining marble cribs with beds which afforded maximum exposure to the environment and developing and environmental stimulation treatment program. The objectives include: improvement in neuromuscular, sensorimotor, and social functioning; development of an appropriate observation form; development of new therapeutic procedures; demonstration of effective use of nonprofessional personnel; and development of an effective training program for nonprofessional personnel. (No refs.) - L. Clevenger

Clover Bottom Hospital and School
Nashville, Tennessee

493 Watson, Edith M., & Wiesen, Allan. Behavior modification in an institution for the retarded: A teaching tool. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 17 p. Mimeographed.

A pilot program based on operant conditioning principles proved successful in modifying the behavior of a 7-year-old SMR boy. The program was initiated in order to demonstrate the value of operant conditioning procedures to attendants. After the S's behavior had been thoroughly studied, a 2-fold program aimed at weakening undesirable behaviors via isolation and at strengthening social interaction with peers via positive reinforcement was initiated. At the end of a 2-week period undesirable behavior had been eliminated almost completely and social interaction with peers had increased. Attendants appeared to participate more actively in the portion of the program designed to weaken undesirable behavior and were less interested in the portion designed to strengthen peer interaction. The program proved valuable in that it trained attendants in the use of operant conditioning techniques, helped them see that behavior modification was possible, and made them aware of their role in bringing about behavior change. (10 refs.) - J. K. Wyatt.

Fircrest School
15230 - 15th Avenue N.W.
Seattle, Washington 98155

494 Pratt, Roland E. County Days - a tool for social action. Mental Retardation (AAMD), 5(4):42-43, 1967.

"County Day" is an effort by the Glenwood State School (Iowa) to enlighten and interest the general public in MR and stimulate support for specific services for the MR as part of improved general health, education, and welfare services. A "core group" is selected for each county so that promotion of a County Day comes from local people. This group determines which civic, professional, and service organizations should be invited to represent a cross section of the population. They select the date, arrange transportation, and hold follow-up discussions. The program begins with brief lectures on treatment and training programs at the institution, discussions, and guided tours to see the programs in action. Planning techniques and some general conclusions about the program are given. (No refs.) - E. F. MacGregor.

Glenwood State School
Glenwood, Iowa

PERSONNEL AND STAFF DEVELOPMENT

495 Lombardi, Thomas P. Broadening education within the institution through recreational/educational therapists. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 6 p. Mimeographed.

Field experiences are necessary for making school subject matter meaningful for the MR and especially for institutionalized MR who may be located in isolated areas. Recreational/educational therapists (RET) are being employed at the state institution for the MR in Arizona. One of their major responsibilities is to broaden the boundaries of the education and training programs by providing concrete field experiences for school subject matter. During their initial training period the RETs observe classroom teaching, review the curriculum, and attend teacher conferences. They are thus able to establish a relationship with the teachers for making a cooperative effort. Two small buses have been made available to make field experience trips possible. Before a trip is made with the students, the RET actually visits the place to determine educational value and applicability to the various classes. RETs make all the arrangements freeing teachers' time so that greater attention can be given to trip readiness. Also, the teacher is provided with necessary information about the trip beforehand. The teacher always accompanies his class and correlates experience with the classroom teachings. RETs also provide additional supervision and help for the resident

students who are moderately retarded, epileptic, physically handicapped, or behavior problems. (2 refs.) - C. M. N. Mehrotra.

Arizona Children's Colony
Coolidge, Arizona

496 De Koven, Toni, Miller, C. R., & O'Connor, Gail. Selected variables of institutional employees by patient contact and length of employment. American Journal of Mental Deficiency, 71(6):1004-1008, 1967.

Questionnaires were utilized to examine the effect of degree of patient contact on length of employment of non-professional institutional personnel. Patient contact was significant in determining length of stay, and employees who had direct contact with patients had an overall shorter duration of employment. Fourteen objective variables such as sex, age, proximity of home to institution, and education were examined for their contributions to this difference in length of stay and degree of patient contact. Suggestions are made for future studies. (9 refs.) - (Source: AJMD)

Pacific State Hospital
Box 100
Pomona, California 91766

497 Guerrero, Charlene. Work therapy for the retarded. Staff, 4(4):6, 1967.

In-service training for institutional employees can improve employee attitude and SMR habilitation. The training program at the Pacific State Hospital includes the meaning of work, how MRs learn, and how to shape behavior. Using methods learned in the classroom, the employee teaches 1 SMR, who is assigned to him for 6 weeks, a new skill--the major goal being to provide a therapeutic experience. The program has resulted in employees approaching their jobs with new pride and enthusiasm and former custodial patients finding gratification in helping others. There is also a decrease in behavior problems and withdrawal behavior. (No refs.) - A. Clevenger.

Pacific State Hospital
Pomona, California

498 Baldwin, Victor L. Attendant training. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 2 p. Typed.

The use of a cottage training ward has proven effective as a means of training aides at Fairview Hospital and Training Center, Salem, Oregon. Partial funding for the training of 75 aides every 12 weeks has been provided by a Bureau of Apprenticeship Training grant. Several approaches to training have been attempted. The most successful of these involves the setting aside of an entire ward in each cottage to be used for training purposes. Every aide in a cottage spends 1 week in an intensive training situation on the training ward. Weekly meetings of the cottage staff and training supervisory personnel are used to answer questions, discuss training procedures, and present lecture material. Instruction in the use of behavior modification techniques is provided. Osgood's Semantic Differential and a daily log kept by each aide are used to assess aide attitude change and to evaluate the usefulness of the program. (No refs.) - J. K. Wyatt.

Fairview Hospital and Training Center
2250 Strong Road S. E.
Salem, Oregon 97310

499 Butterfield, Earl C. The characteristics, selections, and training of institution personnel. In: Baumeister, Alfred A., ed. Mental Retardation: Appraisal, Education, and Rehabilitation. Chicago, Illinois, Aldine Publishing, 1967, Chapter 12, p. 302-328.

Recent interest in the problems of the MR has stimulated research on the effects of institutional environment and the quality of institutional personnel. Particular attention has been focused on attendant quality because of their parent substitute role, their responsibility for carrying out programs, and their involvement with the special physical, emotional, and educational needs of the patient. The development of attendant selection programs should involve: (1) the use of practical assessment procedures that will predict subsequent performance, (2) the development of reliable and valid criteria of attendant performance that will permit quality differentiations, and (3) the formation of an integrated guiding concept of attendant performance and the factors which influence it. Research studies using personality measures as predictors have found that when selection of these measures is based on a knowledge of the institution, a relationship

exists between attendant personality and performance quality. Neither tenure nor performance seem to be influenced by attendant intelligence level. The economic situation of the institution does affect attendant turnover rate. Working conditions influence both presently employed attendants and the quality of future attendants. In recent years, institutions have attempted to raise attendant quality level by offering in-service training programs designed to affect attitude change and behavior. These programs have employed a variety of training techniques--practical demonstrations, lectures, role play, discussion, and books. Present research efforts are directed toward the evaluation of specific techniques or combinations of techniques and toward an assessment of the effects of these programs on attendant attitude change and behavior. (67 refs.) - J. K. Wyatt.

Yale University
New Haven, Connecticut

500 Bartlett, Robert. The role of United Cerebral Palsy Associations of New York State in staff training at state schools for the mentally retarded. In: American Association on Mental Deficiency, & U. S. Public Health Service, Mental Retardation Branch. Role of Physical Therapy in Mental Retardation. Proceedings of the Workshop for Physical Therapists held at the 90th Annual Convention of the American Association on Mental Deficiency, Chicago, Illinois, May 1966, p. 90-92. Mimeographed.

The New York State United Cerebral Palsy Associations aided in the development of an in-service training program for attendants at state institutions for the MR. The goals were to develop an awareness of the MR's problems, to demonstrate techniques for handling the children, and to strengthen the inter-staff relationships between the rehabilitation personnel and the attendants. The program included: definition, etiology, and description of MR; normal child development and its implications for MR; day care techniques; adaptive equipment; and recreational adaptation. Supervision and follow-up discussions with consultant physical therapists improved the success of the program. A resultant outcome was the development of a feeling in the attendant that he can teach the child under his care to perform certain tasks for himself. (No refs.) - L. Clevenger.

UCP Associations of New York State
220 West 42nd Street
New York, New York 10036

501 Penny, Ruthanna. Substitute Parents: Training the Profoundly Retarded Patient for Return to the Community. Springfield, Illinois, Charles C. Thomas, 1967, 97 p. $5.75.

That profoundly MR children can be taught to develop self-help skills, is the philosophy of this manual designed for personnel who are charged with or assume the responsibility of the care of these children. Foster home placement depends primarily on training and development of these skills. Training methods should emphasize activities which are within the child's capabilities. Suggested goals for an habilitation program are: self-care, self-expression, social and emotional adjustment, and diversional activities such as participation in music therapy or learning to control aggressive behavior. Program activities should include habit training, basic academic and social skills, and religious and recreational activities. Additional activities aimed at physical rehabilitation should be available for physically handicapped children. Programs need to be well-structured. Firmness and consistency should be emphasized. Discipline should be used as a means of teaching. Small group interaction and 1-to-1 relationships may prove effective as training methods. Attention must be given to the implications of both verbal and nonverbal communication. Many of the children's communication attempts may be nonverbal. Nursing personnel should try to convey feelings of warmth and acceptance and should speak directly to each child so that the child may learn to speak. Parents, foster parents, and nursing personnel need to understand that advancement will be very slow and that progress will require much time and patience. (31-item bibliog.) - J. K. Wyatt.

CONTENTS: Introduction; One-to-One Relationship; Small Group Interaction; Profound Retardation Complicated By Physical Handicaps; Communication.

COMMUNITY PROGRAMS AND SERVICES

502 Jaslow, Robert I. A modern plan for modern services to the mentally retarded. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Pre-convention Administration Seminar, Denver, Colorado, May 16, 1967, 8 p. Mimeographed.

Personal services for MRs need to be provided within a community health framework which emphasizes quantity, quality, and efficiency of

services rather than isolated specialized services. Program planning should include: (1) the opening of all appropriate generic agencies to MRs; (2) the provision of training in MR for all health, educational, rehabilitative, and employment service workers; (3) the development of specific definitions concerning the missions of specialized services, agencies, and facilities; (4) the placement of MR specialists who will serve as consultants and as in-service educators in generic agencies; (5) the development of national and local standards, guidelines, and regulations for services and training; and (6) the establishment of a community coordinating mechanism which will insure balanced services and planning for MRs. (No refs.) - J. K. Wyatt.

Division of Mental Retardation
Social Rehabilitative Services
Washington, D. C.

503 Clark, Margaret Fletcher. Community teams ponder retardation. Rehabilitation Record, 8(4):5-6, 1967.

A community planning approach was employed at the Second Institute on Rehabilitation of the Mentally Retarded held at California State College, January 1967 in order to increase delegate knowledge about MR and help them plan for improved services for MRs in their communities. Institute delegates came from California, Guam, and Hawaii and represented vocational rehabilitation agencies, welfare programs, school systems, and private community or parent councils. Lectures, observations of MR training programs, clinic observations, and interviews with MRs were used to increase delegate awareness of the retardates' needs. An interdisciplinary faculty aided each group in evaluating its present program and resources and in developing plans for improvement. Some community groups are planning similar institutes in their communities. (No refs.) - J. K. Wyatt

No address

504 Jennings, A. N. Report on a conference on a policy for services for the mentally retarded. In: Australian Group for the Scientific Study of Mental Deficiency. Proceedings of the Fifth Annual Interstate Conference on Mental Deficiency. Van Pelt, J. D., ed. Brisbane, Australia, October 1966, p. 19-28.

The November 1965 working conference on services for the MR, formulated a policy on community care for the MR. A "defect register" as well as an "at-risk register" of those factors likely to produce MR, and evaluation facilities of progressive sophistication from regional nurses to comprehensive centers will aid recognition of MR. More and better day care centers are needed with specified standards of staff selection and teacher education. Systematic regional organization of workshops incorporating industry will provide community education and better social adjustment for the MR. The aims of community care for the MR are: protection of their rights, development of their full potential, advisory facilities for their community and families, assurance of their security, and standards of staff selection and education. (No refs.) - W. A. Hammill.

Department of Public Health
Sydney, Australia

505 Michigan. Mental Health Department, Mental Retardation Division. Manual for Operation of Community Adult Activity Centers for the Mentally Handicapped. Lansing, Michigan, 1966, 8 p. Mimeographed.

Community adult activity centers for MRs function in accord with the established policy of the Department of Mental Health (DMH). Salient features of the program include: an age requirement of over 21 years; medical examinations of staff and clients; programs arranged to individual needs on a 12-month, 5-day a week schedule; a staff ratio of 1:10; aides with at least high school education; supervisors with a college degree and experience in the field; housing facilities which comply with fire, health, and building laws; consultant services to aid in programming, developing, orienting, and training; the keeping of records and reports; the allotment of leave and travel time. The DMH allocates funds to qualified centers and provides evaluations to insure that standards of the staff and client are maintained. Upon termination of a center, all state property is returned to the DMH. Fees for this nondiscriminating program may be adjusted. (No refs.) - G. Trakas.

506 D'Aluisio, Nicholas J. Independent living: Half-way house to community placement. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 8 p. Typed.

An independent living unit located at the Mansfield Training School, Mansfield Depot, Connecticut has been used successfully as a

half-way house to prepare MR men for community placement. In order to be eligible for residence on this unit a man must be employed either at the School or in the neighboring community. Residents have single rooms and grounds privileges. They use the same recreational facilities as the school employees and eat their meals with them. They assume full responsibility for their own personal care, the use of their leisure time, and for punctuality. Instruction and experience in the handling of personal finances are provided. Some of the rooms are reserved for men who have permanent jobs at the School and who are not likely to be successful in community placement. The men particularly value the opportunities which the unit affords for privacy and independent living. Since its beginning 18½ months ago, 21 out of 43 residents have been placed successfully in the community. A second unit for men has just been opened and plans are underway to establish a unit for girls. (No refs.) - J. K. Wyatt.

Mansfield Training School
Mansfield Depot, Connecticut

507 Un "foyer", annexe du centre d'aide par le travail, est indispensable aux adultes. (A "home," annex of the sheltered workshop, is indispensable for adults.) Nos Enfants Inadaptes, quarterly review (special issue):15-17, 1967.

The relatively new concept of a home and workshop arrangement for adult MRs in France is presented. The retarded adult needs assurance of a continuation of his mode of living after his parents die. The "home" arrangement is based on 3 objectives: materially, the MR must be cared for; emotionally, he needs a continuance of his protected environment; and therapeutically, uninterrupted pursuit of therapy and education must be assured. Restrictions to meet these goals include the location of buildings in proximity to a town, a good hospital, a rural environment, and near places of work. The building is to have small family living units of not more than 20 persons. The accepted plan has 2 wings; each shelters 10 persons of the same sex, 3 per room or in individual rooms for the more independent. The residents share a common room during meals, evenings, and recreation. The problem of the 2 sexes together is solved by having intelligent supervision. The workers' days are arranged as close to those of normal adults as possible. The minimum personnel for such a center consists of a director who serves as a special teacher and as business manager, a teacher's aid who has charge of the evening hours, and a cook. An estimated budget is presented based on 1 week's operational expenses for 20 residents. (No refs.) - D. Jones.

508 Gall, Joe. The new adult activity centers: Designed for living, not limbo. Motive, 13(7):5-8, 26, 1967.

To bridge the existing gap between school and the job, adult activity centers are being created in Ohio to help the MR become self-sufficient within his capacity. A $200.00 per child subsidy is allotted for activities, training, and counseling for adult MRs who are unable to attend community classes or workshop programs because of age or immaturity. With the aid of the Bureau of Mental Retardation, 4 centers are now operating. While the programs differ in scope, the goal is the same--improved functioning of the MR. The centers provide assistance in preparing the young adults for workshops or more specialized training programs. (No refs.) - A. Huffer.

No address

509 U. S. Children's Bureau. Children in Day Care: With Focus on Health. Dittman, Laura. (Children's Bureau Publication No. 444-1967) Washington, D. C., Superintendent of Documents, U. S. Government Printing Office, 1967, 120 p. $0.50.

Some MR and physically handicapped children can profit from attendance at special day care centers where programing and staffing are planned to meet their special needs. Before a child is placed in a day care program a thorough diagnostic evaluation of total development and an estimate of strengths should be made. Programs can provide social experiences and sensory, speech, and self-care training. Provisions for medical supervision may be needed. Centers can relieve parents of SMR children of total supervisory responsibility by providing nursing care. These guiding principles for the development of day care programs designed to assist the health development of children in specific age groupings, handicapped children, and migrant children will be of interest to pediatricians, educators, public health nurses, and social workers. (147 refs.) - J. K. Wyatt.

CONTENTS: A New Look at Children; General Principles of Health for Daytime Programs; Components of the Health Program; The Infant and Toddler; The Preschool Child; The School Child; The Child with a Handicap; Children

of Seasonal Agricultural Workers; For Children Everywhere.

510 Michigan. Mental Health Department, Mental Retardation Division. Manual for Operation of Community Day Care Centers for the Severely Mentally Handicapped. Revised edition. Lansing, Michigan, 1966, 12 p. Mimeographed.

Part of the policy and procedure for SMRs in community day care centers (CDCC) is to make the centers an integral part of the mental health program. The program functions to teach SMRs self-care, language development, sensory training, social and work skills, as well as to provide activity and recreational programs. SMRs are homogeneously placed by chronological age. Criteria for participation requires the client to be ambulatory, have an IQ below 30, and be unable to participate in programs for TMRs. CDCCs operate on a yearly basis, 5 days a week, 6 hours a day with schedules arranged to individual needs. Training aides must be 21-50 years of age, high school graduates with experience, and able to work with a unit of 6 SMRs. Supervisors must have a college degree with a background in nursing, education, recreation, kindergarten, or nursery experience. Centers must meet local fire and health laws. Consultive advice is offered for the development of centers and staff training through the Department of Mental Health (DMH). Day nursing care, developmental training, and parent counseling comprise the core program. An assessment of the enrolling client is made to determine his medical, psychological, physical, and social needs. Reports are sent to the DMH who has the jurisdiction of all centers. The DMH helps to finance the centers and insures that the standards, personnel hiring, consultive services, and patient care are upheld. Fees are adjusted according to the ability to pay in all the nondiscriminating centers. Equipment and furnishings purchased through the state are returned to the state upon termination of a center. (No refs.) - G. Trakas.

511 Minimum Health Standards for Group Day Care of Children. Lansing, Michigan, State Mental Health Department, Mental Retardation Division, 1966, 19 p.

The minimum health standards for group day care of children as set by the Michigan Department of Public Health includes continuous health supervision of all children; regular physical examination of all personnel; elimination of tuberculosis, typhoid, and other communicable disease carriers; specifications of the physical plant; and suggestions about food and nutrition. Each child should have a physical examination and his health record is to be followed daily by nursing staff and another qualified staff member. A child with symptoms of illness or infectious disease is to be excluded from the center. Guidelines for emergency medical care are given. Specifications of building and grounds, heating, ventilation, lighting, screening, water supply, toilets, sewage disposal, garbage, refuse storage and disposal, eating equipment, food handling, sleeping equipment, and cleanliness and maintenance should be met. Food served should meet nutritional requirements and be appetizing. Guidelines for a daily food plan, meals and snacks, food purchasing, food storage, food preparation and meal time are given. A dietary and nutrition consultant may be of service. (2 refs.) - R. Froelich.

CONTENTS: Health Supervision of Children; Health Supervision of Staff; The Plant; Suggestions Regarding Food and Nutrition for Children in Group Day Care; Forms.

512 Atkinson, Dorothy H. Training the inactive special care unit child. Teaching and Training, 5(3):67-73, 1967.

Special care units for physically handicapped SMR children help them to develop their talents and attain a level of independence while living at home with their families. Movement training helps inactive children learn to move and develop normal patterns of movement. The new environment, contact with other people, music, and toys aid in their social training. Self-care skills (feeding, dressing, and toilet training) are taught also. Such training often allows the child to attend school. Methodological techniques are suggested for each of the training areas. (No refs.) - J. K. Wyatt.

No address

513 Alt, Jean. A public health nursing orientation to a child development clinic. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, May 15-20, 1967, 8 p. Typed.

In order to acquaint public health nurses with the symptoms of MR, developmental delay, and with the services provided by the Mental Evaluation Clinic, an orientation program was conducted by the Mental Evaluation Clinic at Texas State Children's Hospital, Houston, Texas. The program emphasizes the importance

of assessing a child's developmental level in order to facilitate the early identification of MR. Information concerning normal growth and development, MR, testing, speech, and hearing was included. Opportunities for participation in evaluation clinics and for supervision and consultation during home visits were provided. The need for communication with and between social agencies in order to coordinate family programs and avoid multiple agency involvement was stressed. Since the initiation of this program an increasing number of early referrals have been made to the Clinic. (No refs.) - J. K. Wyatt.

Child Development Clinic
Texas Children's Hospital
6621 Fannin Street
Houston, Texas 77025

PROTECTIVE PROGRAMS AND SERVICES

514 Social Security Administration. Social Security: What It Means for the Parents of A Mentally Retarded Child. Washington, D. C., Superintendent of Documents, U. S. Government Printing Office, 1966, 6 p. $0.05.

Benefits to disabled MRs when the parent(s) retires, dies, or becomes disabled continues even after age 18. The mother also may be eligible as long as the MR is in her care. Criteria for disability includes inability to sustain gainful work as diagnosed by doctors and impairment which is expected to surpass a 12-month period. If a child is not disabled, payments will stop at age 18 or 22 if the MR is a full-time student. An application should be filed 3 months before age 18 in order for the disabled MR to continue receiving uninterrupted payments. MRs are eligible only if the parent(s) is insured under social security. Payment to MRs under age 18 are made to the parents or to a relative. Further information is available through the National Association for Retarded Children, Vocational Rehabilitation Administration, local public welfare or health departments, public schools, or state institutions for MRs. (No refs.) - G. Trakas.

515 Phillips, A. G. In trust for tomorrow. Parents' Voice, 17(1):14, 1967.

In 1963 the English National Society of Mentally Handicapped Children established the Trusteeship Scheme to provide care for MR on the death of their parents. Inclusion of a provision in the parent's will for 500 British pounds provides a personal relationship with the MR through the society's welfare visitors and assistance previously not readily available to parents of the MR. Complete details are available from the society. (No refs.) - W. A. Hammill.

No address

516 Social security benefits for families with disabled children. Exceptional Children, 33(8):574, 1967.

To date 200,000 MRs and other permanantly mentally and physically handicapped children are receiving monthly social-security benefits. Eligibility is the inability to engage in any substantial gainful activity within a 12-month period. Benefits are commensurate with the earnings of the parent. Rehabilitation possibilities considered at the time of an applicant's claim are according to present vocational capacity, not ability attained after rehabilitation. Refusal of services without cause can result in cancellation of benefits. (Full-time students under 22 years of age are exempted.) If work is attained, payments may continue for a full year as an incentive to keep the claimant employed. Eligible children under 18 now receiving social security benefits should apply for disability benefits 3 months before the eighteenth birthday. (No refs.) - G. Trakas.

MENTAL RETARDATION PLANNING AND LEGISLATION

517 California. State Education Department. Laws and Regulations Relating to Education and Health Services for Exceptional Children in California. Watson, Charles W. Sacramento, California, 1966, 163 p. Price unknown

The laws of the state of California provide for special educational opportunities for EMR and TMR children. Eligibility for educational programs designed to help MR children to become economically useful and socially adjusted extends from age 5 years, 9 months to 21 years. MR children aged 8 to 10 are eligible for education and training planned to "further their individual acceptance, social adjustment, and economic usefulness in their homes and within a sheltered environment." The intellectual status of each child

is determined after individual examination by a psychologist and consultation with parents. Special classes, training schools, occupational training programs, and sheltered workshop training are provided. Unmarked diplomas are awarded to MR children who meet the minimum requirements of the State Board of Education for graduation from a special school. Special education teachers are required to have special education certification. Financial assistance for the training of special education teachers is provided. Curriculum specialists are employed on a part-time basis to aid in the development of educational guidelines to be used by school districts and county superintendents in planning for the special instruction of MR minors. (No refs.) - J. K. Wyatt.

518 Perry, Robert M. The place of the institution in the continuum of services for the retarded. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, May 15-20, 1967, 10 p. Typed.

The Colorado State Plan emphasizes community environment and the use of local community agencies to provide MRs with opportunities to develop their fullest potential. Comprehensive preventive, diagnostic, developmental, and medical services are provided. "High-risk" low income and/or culturally deprived areas receive special planning attention. The trend is away from institutionalization except when absolutely necessary. Emphasis is on localization rather than distant custodial care. The state has been divided into 15 regions and the quantitative and qualitative needs of each region have been assessed. In order to avoid duplication of services and overlapping of responsibility, mental retardation and mental health regions are the same. The state plan is correlated with construction plans for community mental health centers and hospital and medical centers. Services planned for each region include residential care, day care, sheltered workshops, and diagnostic and evaluation clinics. (No refs.) - J. K. Wyatt.

No address

519 Woolf, L. I. Legislation and advances in knowledge--acceleration or inhibition? Journal of Pediatrics, 70(1):150-151, 1967. (Letter)

Justification for treatment of phenylketonuria with a phenylalanine-low diet is found in: (1) avoidance of retardation--even accepting 1 estimate that 60 percent would not have been retarded without treatment; (2) rapid and consistently increasing intelligence with treatment without corresponding increases in the absence of treatment; (3) marked improvement when seizures are present; and (4) dramatic improvement in psychotic behavior when present. (8 refs.) - J. Snodgrass.

Radcliffe Infirmary
Oxford, England

520 Holt, L. Emmett, Jr. Legislation and advances in knowledge--acceleration or inhibition? Journal of Pediatrics, 70(1): 151, 1967. (Letter)

Evidence of considerable concurrence between the chemical anomaly in phenylketonuria and the mind, and the effects of dietary treatment justify screening programs and therapy and should not be discouraged because of imperfections. (No refs.) - J. Snodgrass.

New York University
New York, New York

521 Waisman, Harry A. Legislation and advances in knowledge--acceleration or inhibition? Journal of Pediatrics, 70(1): 151-152, 1967. (Letter)

Experience with 30 phenylketonuric (PKU) patients indicates that normal growth will occur if the phenylalanine plasma level is carefully maintained within or slightly above normal range. An unpublished study has shown that infant monkeys, born to females receiving high levels of phenylalanine throughout pregnancy and fed normal diets after birth, show strikingly poor performance on behavioral and learning tasks. This demonstrates that: (1) high phenylalanine levels may have a deleterious effect on the developing fetal brain; and (2) test motivation plays no role. (No refs.) - J. Snodgrass.

University of Wisconsin
Medical Center
Madison, Wisconsin

522 Bessman, Samuel P. Legislation and advances in knowledge--acceleration or inhibition? Journal of Pediatrics, 70(1): 152-153, 1967. (Letter: comment on letters by Woolf and Waisman)

The efficacy of dietary treatment of phenylketonuria (PKU) has been compared to that of penicillin where the results can be verified

in bacterial cultures, in experimental infections in animals, and in human observations connecting symptomatology to the presence and number of viable organisms, and the number of viable organisms to the presence of the drug. No laws propose testing of organisms for penicillin sensitivity or allergy, or for blood culture under particular circumstances. Statistical probability of the distribution of normal versus abnormal intelligence is unclear due to the lack of control populations. The efficacy of treatment is also questionable due to the large percentage of treated children who do not have PKU. (3 refs.) - J. Snodgrass.

University Hospital
University of Maryland
Baltimore, Maryland 21201

PARENTS AND FAMILY

523 French, Edward L., & Scott, J. Clifford. How You Can Help Your Retarded Child: A Manual for Parents. New York, New York, J. B. Lippincott, 1967, 190 p. $3.95.

In order to provide for the optimal development of an MR child parents need to acknowledge the retardation and, with the aid of specialists, develop a total life plan for the child which includes a long-range educational and training program. This revision of Child in the Shadows (1960) provides information on the causes of MR, prognosis and treatment methods, and the role of the parents of an MR child. Data on intelligence, social maturity, emotional adjustment, and personality development provide guides for parental practices which will aid healthy development. This book is intended to be used by parents of MR children, doctors, lawyers, and clergymen. (27-item suggested reading list) - J. K. Wyatt.

CONTENTS: The Problem; "No!"; "Are You Sure He Is Retarded?"; "What Is Mental Retardation?"; "Am I To Blame?"; "What Is The IQ?"; "What Is Social Maturity?"; "Will He Develop Emotionally?"; "What Can I Do At Home?"; What Is The Best Life Plan?"; "What Is Being Done?"; Questions and Answers.

524 Meyerowitz, Joseph H. Parental awareness of retardation. American Journal of Mental Deficiency, 71(4):637-643, 1967.

A 2-year study to determine parental awareness of MR was done among 120 EMRs in regular and special education classes (control-experimental groups) and 60 normals in a criterion group. This involved random assignment of 6½-year-old first graders with Binet IQs of 60-85 and 90-110 (criterion). Each family had 3 interviews consisting of a discussion about their child, completion of an awareness form of intelligence and social skills, and a re-evaluation of academic areas. EMR parental awareness to their child's environment was evasive. They saw them as completing fewer years of school. The work and life goals were not statistically undifferentiated from the criterion group. Parents of the special education group showed more awareness but were not statistically significant in tendencies to devalue their children. The criterion group was significantly different from the EMR parents but the control and experimental groups were not statistically different from each other. (10 refs.) - G. Trakas.

Houston State Psychiatric Institute
Texas Medical Center
Houston, Texas

525 Stone, Nellie D. Family factors in willingness to place the mongoloid child. American Journal of Mental Deficiency, 72(1):16-20, 1967.

Study of the placement intentions of 103 sets of parents with mongoloid children indicated that initially the character of their experiences and relationships during the birth crisis was influential, while their subsequent willingness reflected the increasing impact of personal, social, and situational factors. Adequate knowledge about their child's condition, availability of community programs, and participation in a parents' association seemed to help parents adapt to having the child at home, but with the continued stress of his presence as he grew older, placement was more likely to be considered necessary for the family's welfare. (9 refs.) - (Source: AJMD)

Newark State College
Union, New Jersey

526 Wolfensberger, Wolf. Counseling the parents of the retarded. In: Baumeister, Alfred A., ed. Mental Retardation: Appraisal, Education, and Rehabilitation. Chicago, Illinois, Aldine Publishing, 1967, Chapter 13, p. 329-400.

The counseling profession should make available to parents of MR children long-term

counseling aimed at dealing with their special problems. Guidance may be needed when MR is first discovered; when decisions about the advantages of institutional placement or home care need to be made; after a child is placed in an institution; and when problems of home management arise. Research on the effectiveness of parent counseling indicates that parents have been both misjudged and misunderstood. In order to work effectively with parents, counselors need to: (1) use a reality-centered rather than a therapy-centered approach, (2) possess positive attitudes toward the MR and their problems, and (3) be well informed about MR. Research studies on the effects of an MR child on family development have centered around the initial and continuing reactions of individual parents, the impact of an MR child on the family unit, sibling adjustment, parent dynamics, parental coping mechanisms, and parent-professional relationships. In order to develop helpful counseling procedures, well-designed and well-controlled research aimed at the identification of the special problems and needs of parents of MR children is needed. (339 refs.) - J. K. Wyatt.

Nebraska Psychiatric Institute
Lincoln, Nebraska

527 Illingworth, R. S. Counselling the parents of the mentally handicapped child. Clinical Pediatrics, 6(6):340-348, 1967.

Parents of mentally handicapped children need to maintain a continuous counseling relationship with their pediatrician in order to receive help and advice in dealing with the questions, problems, and difficulties which arise. The doctor should tell, in a sympathetic manner, the parents about the child's abnormality as soon as an adequate diagnosis has been made. Research evidence indicates that mothers prefer to be told as soon as possible and desire to have their husbands present. The parents' first reaction to news of abnormality is usually shock. It is important for the doctor to help them deal with feelings of guilt, blame, rejection, shame, and superstition and with the physical, financial, and emotional stress which they may experience. He should make an assessment of the child's developmental future and in sharing this with the parents help them decide what is best for the child. They will need help in managing the child, in choosing a fitting school situation for him, and in deciding whether to keep the child in the home or place him in an institution. Parents need to be guided away from the practice of keeping the child too dependent and toward the idea of helping him develop as much independence as possible. At the same time they need to realize that his affectional needs are greater and last longer than those of a normal child. Parents who have had a mentally handicapped child need honest, informed, genetic counseling regarding future family planning. Parent groups are helpful but continuous, informed, sympathetic counseling with a pediatrician is essential. (20 refs.) - J. K. Wyatt.

University of Sheffield
The Western Bank
Sheffield 10, England

RELIGION

528 Murray, Gail. The Confraternity of Christian Doctrine apostolate to the mentally retarded. Digest of the Mentally Retarded, 3(3):150-154, 1967.

Five hundred adults and high school seniors in the Archdiocese of New York participated in 15 pilot training courses in order to learn how to teach religion to MR children. The text used in the course was Catechetical Pedagogy of the Mentally Deficient Children by Bissonnier. A teacher training manual--All God's Children--was developed; demonstration classes were held; teacher qualifications were assessed; and a bibliography of visual aid materials was assembled. Upon completion of the training program these teachers taught religion in 30 MR centers in the New York area. (2 refs.) - J. K. Wyatt.

Confraternity of Christian Doctrine
Archdiocese of New York
New York, New York

529 Snyder, Milton P. The chaplain in mental retardation as educator. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 9 p. Mimeographed.

A questionnaire-survey of 51 chaplains of MR institutions revealed that 90 percent considered their role to be that of educator and 80 percent received administrative encouragement in carrying out this role. The purpose of the survey was to examine the role of chaplains in the education of persons outside the institution. Chaplain-educator was defined as "one whose experiences and motivations

give him a genuine desire to lead others to an expanded concept of MR, embracing its facts, its faces, and its future." Eighty percent of the Ss were used as resource persons by high school, college, university, and theological students. Three different program approaches were reflected: the circulation of information on MR; the use of contacts with visitors to obtain benefits for institution residents; and the assumption of a dual responsibility for the welfare of residents and the education of the public. Ss used a variety of training methods. Among those considered most valuable were training films, literature distribution, directed reading, providing general information, participation in worship, and staff conference participation. The groups outside the institution reached by a majority of the Ss were lay church groups, clergy groups, college-university groups, and civic groups. Ss saw the nature of man, the nature of the church, the nature of religious experience, the nature of God, and the nature of communication as being the primary theological issues in MR. (No refs.) - J. K. Wyatt.

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Milledgeville, Georgia 31061

The journals listed below are scanned regularly for articles pertinent to mental retardation.

Academic Therapy Quarterly
Acta Genetica et Statistica Medica
Acta Neuropathologica
Acta Ophthalmologica
Acta Paediatrica Belgica
Acta Paediatrica Scandinavica
Acta Paedopsychiatrica
Acta Pathologica et Microbiologica Scandinavica
Amentia
American Child
American Education
American Journal of Diseases of Children
American Journal of Human Genetics
American Journal of Medicine
American Journal of Mental Deficiency
American Journal of Nursing
American Journal of Obstetrics and Gynecology
American Journal of Occupational Therapy
American Journal of Ophthalmology
American Journal of Orthopsychiatry
American Journal of Pathology
American Journal of Psychiatry
American Journal of Sociology
American Journal of the Medical Sciences
American Psychologist
American Sociological Review
Annals of Human Genetics
Annales Medico-Psychologiques
Annales Paediatriae Fenniae
Archiv fur Kinderheilkunde
Archives Francaises de Pediatrie
Archives of Dermatology
Archives of Disease in Childhood
Archives of General Psychiatry
Archives of Neurology
Archives of Ophthalmology
Australian Children Limited
Australian Paediatric Journal
Biologia Neonatorum
Brain
British Journal of Educational Psychology
British Journal of Preventive and Social Medicine
British Journal of Psychiatry
British Journal of Psychology
British Journal of Social and Clinical Psychology
British Medical Journal
Bulletin of the Menninger Clinic
California Education
California Mental Health Research Digest
Canada's Mental Health
Canadian Medical Association Journal
Canadian Nurse
Catholic Charities Review
Cerebral Palsy Journal
Cheshire Smile
Child Development
Child Welfare
Children
Children's House
Clinical Pediatrics
Clinical Proceedings of Children's Hospital of the District of Columbia
Community Mental Health Journal
Comprehensive Psychiatry
Confinia Psychiatrica
Cytogenetics
Developmental Medicine and Child Neurology
Digest of the Mentally Retarded
Diseases of the Nervous System
Dissertation Abstracts
dsh Abstracts
Education and Training of the Mentally Retarded
Educational and Psychological Measurement
Elementary School Journal
Enfance
Epilepsia
Eugenics Quarterly
Eugenics Review
Exceptional Children
Family Law Quarterly
Federation Proceedings
Forum
Forward Trends
France Medicale
General Practice
Genetic Psychology Monographs
German Medical Monthly
Harvard Educational Review
Health, Education and Welfare Indicators
Health Laboratory Science
Heilpadagogische Forschung
Heilpadagogische Werkblatter
Helvetica Paediatrica Acta
Hospital and Community Psychiatry
Institute of Applied Psychology Review
International Child Welfare Review
International Journal of Neuropsychiatry
International Journal of Religious Education
International Nursing Review
International Rehabilitation Review
Israel Journal of Medical Sciences
Japanese Journal of Child Psychiatry
Journal de Psychologie
Journal of Abnormal Psychology
Journal of Child Psychology and Psychiatry
Journal of Clinical Endocrinology and Metabolism
Journal of Clinical Psychology
Journal of Comparative and Physiological Psychology
Journal of Consulting Psychology
Journal of Counseling Psychology
Journal of Educational Psychology
Journal of Educational Research
Journal of Experimental Child Psychology
Journal of Experimental Medicine
Journal of Experimental Psychology
Journal of General Psychology
Journal of Genetic Psychology
Journal of Medical Genetics

Journal of Mental Deficiency Research
Journal of Mental Subnormality
Journal of Nervous and Mental Disease
Journal of Neurochemistry
Journal of Neurology, Neurosurgery, and Psychiatry
Journal of Neuropathology and Experimental Neurology
Journal of Neurophysiology
Journal of Neuropsychiatry
Journal of Neurosurgery
Journal of Nutrition
Journal of Pediatrics
Journal of Personality
Journal of Psychiatric Nursing
Journal of Psychology
Journal of Rehabilitation
Journal of Rehabilitation in Asia
Journal of Secondary Education
Journal of Social Psychology
Journal of Special Education
Journal of Speech and Hearing Disorders
Journal of Speech and Hearing Research
Journal of the American Medical Association
Journal of the American Physical Therapy Association
Journal of the Experimental Analysis of Behavior
Journal of the Neurological Sciences
Journal of the South African Logopedic Society
Journal of Verbal Learning and Verbal Behavior
Lancet
Lebenshilfe
Medecine Infantile
Medical Journal of Australia
Medical Science
Medical World News
Megamot
Mental Health
Mental Retardation (AAMD)
Mental Retardation (Canadian ARC)
Mental Retardation in Illinois
Merrill-Palmer Quarterly
Metabolism
Mind Over Matter
Motive
NEA Journal
Neurology
New England Journal of Medicine
New York State Education
Nos Enfants Inadaptes
Nursing Mirror
Nursing Outlook
Nursing Research
Nursing Times
Obstetrics and Gynecology
Ohio State Medical Journal
Our Children
Panminerva Medica
Parents' Voice
Parks and Recreation
Pediatrics
Perceptual and Motor Skills
Perspectives in Biology and Medicine
Pointer
Postgraduate Medical Journal
Proceedings of the Royal Society of Medicine
Proceedings of the Society for Experimental Biology and Medicine
Psychiatria et Neurologia Japonica
Psychiatria, Neurologia, Neurochirurgia
Psychiatric Quarterly
Psychological Bulletin
Psychological Monographs
Psychological Record
Psychological Reports
Psychological Review
Psychology
Psychotherapy and Psychosomatics
Recreation in Treatment Centers
Rehabilitation in Australia
Rehabilitation Literature
Rehabilitation Record
Review of Educational Research
Revista Brasileira de Deficiencia Mental
Revue d'Hygiene et de Medecine Sociale
Revue Neurologique
Science
Scientific American
Slow Learning Child
Social Casework
Social Problems
Social Science and Medicine
Social Work
Southern Medical Journal
Special Education
Special Education in Canada
Special Education Review
Teaching and Training
Texas Medicine
Texas Reports on Biology and Medicine
Tijdschrift voor Zwakzinnigheid en Zwakinnigenzorg
Training School Bulletin
Virginia Journal of Education
Welfare Reporter
Winnower
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Abbreviations: amg - among; b.i. - brain injury or brain injured; c/w - compared with; c.p. - cerebral palsy; EMR - educable mentally retarded; ep. - epilepsy; inst. - institutional, institutionalized; MR - mentally retarded; SMR - severely mentally retarded; TMR - trainable mentally retarded; w/ - with.

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